CYPERACEAE
Carex

Got Sedge? Part One.
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CAREX Linnaeus 1753 **SEDGE, *LAÎCHE*, SHEAR-GRASS** *Carex,* Classical Latin name, possibly derived from Greek, *keirein*, to cut, from the sharp leaves & stems of many spp, or possibly from the Proto-Indo-European root **kars*, scratch or rub. Sedge is from the Old English *secg*, of Germanic origin, from Indo-European root shared by Latin *secare* to cut, similar to such words as Sicarii, Judas Iscariot, dissect, or bisect. Much of the following is several paragraphs is drawn from Ball & Reznicek 2002 in FNA.

Carex is a large cosmopolitan genus, one of the largest vascular plant genera, with nearly worldwide distribution, though rare in tropical lowlands (a few spp in se Asia) & rare in sub-Saharan Africa. Hermann (1974) notes the carices of Mexico & Central America are largely confined to mountainous areas. It is the largest genus in the *Cyperaceae*. Carices are usually associated with moist or wet habitats, some spp in up to 20 inches of water during the growing season, but 25% of all Illinois' spp are upland. *Carex* may dominate wetlands, arctic tundra, montane grasslands, montane rocky habitats, & forests. Carices may occur in spp rich assemblages, with 20 spp found in a few acres of eastern forests (Ball & Reznicek 2002). x = 10.

Kükenthal (1909) listed 793 spp worldwide, with large number of varieties & forms. Mohlenbrock (2005) suggests there may by 2500 spp worldwide. Ball & Reznicek (2002) note about 2000 spp worldwide, 480 in North America. Mackenzie (1931-1935) described 533 spp in North America, with few varieties. Gleason (1952) recognized 220 spp in NE USA & adjacent Canada. Jones (1950) listed about 115 carices (a genus) in Illinois compared to about 220 spp of grasses (a family). Mohlenbrock (1999) lists 159 spp in Illinois. Swink & Wilhelm (1994) describe 150 spp & principal varieties in the Chicago region (*their area includes cos in nearby Indiana, Michigan, & Wisconsin, with many additional varieties mentioned in the text*.)

Carices are of great ecological importance, but outside ranching, restoration/erosion control, horticultural industries, & academia, they are of little direct economic value or interest. Sedges are the most important forage plants in many regions of the world. Caric sedges are important members of almost all temperate, arctic, & alpine natural communities, dominant or co-dominant in some communities. The indirect economic benefits of these natural areas are incalculable. Carices are key spp in stream bank & shoreline stabilization, wetland mitigation, & natural area restoration.

Caric sedges are all around. If you aren't anal with the Scott's Turf Builder Plus, they might co-exist with your turf grasses. If you have a wooded lot, you have sedges. They line our interstate & tollway verges & ditches. They are present in most rural roadsides that haven't been recently disturbed. Sedges line our drainage ditches & dominate some wetlands.

Carex are perennial herbs (some say our Midwestern spp are perennial, but Ball & Reznicek (2002), & Gleason (1952) state all *Carex* are perennial spp, but some may behave as facultative annuals), grass-like, with long, usually narrow, parallel veined, 3-ranked leaves, cespitose or not, rhizomatous, rarely stoloniferous. Stems are usually trigonous (triangular) in cross section, rarely round, & are solid, not hollow. Flat leaves have a distinct midvein. Leaves are basal & cauline, occasionally all basal. Cauline (stem) leaves have overlapping sheaths, with a lower one covering the base of the one above. The lowest leaves are sometimes reduced to bladeless sheaths, termed aphyllopodic. Leaf blades diverge

Inflorescences are terminal with "spikelets born in spikes arranged in spikes, racemes or panicles." (Ball & Reznicek 2002). Spikes usually subtended by a bract, which can be sheathless or sheathing at the base, leaf-like, scalelike, or reduced to a sheath only. The bracts subtending spikelets are scalelike or very rarely leaflike. Spikelets are one flowered. Flowers are of one sex, each subtended by a scale (or scales 0-1, Ball & Reznicek 2002), arranged in short, head-like to slender spikes. The male & female flowers are in different spikes, different parts of the same spike, not mingled, or in some dioecious spp on different plants. Stamens 3, exerted at anthesis. Staminate flowers said to have no scales (Ball & Reznicek 2002, page 254, *is the sentence a typo?*), but staminate scales are described later in the work, i.e., Section *Squarrosae.* (*In some older British literature, flask may be used as a term for the perigynia of Carex. Pistillate scales may be call glumes in some older works or Asian literature. In some European & Asian literature, the perigynia may be called the utricle. Some writings refer to the utricle, glume & nutlet.*) Pistil 1, ovary lenticular or trigonous with 2 or 3 (or very rarely 4) styles respectively, styles deciduous or persistent. The ovary surrounded by a flask-shaped prophyll, or perigynium (a modified bract (?) or a modified scale with fused margins), which has a terminal opening through which the styles protrude, a bladder-like, usually indehiscent, one seeded fruit. The fruit (?), an achene or nutlet, is lenticular (biconvex or plano-convex), trigonous, rarely 4-angled, very rarely 6-knobbed, or nearly round. (*Some tristigmatic, trigonous-achened spp occasionally have a few distigmatic flowers, producing lenticular achenes, intermingled. The opposite is also true. G&C, Hermann 1970, Hurd et al 1998*)

Carices with variable achenes

Nomenclature after Hermann (1970)

Carex bigelowii	lenticular, sometimes abnormally trigonous	*Acutae*
Carex concinnoides	tetragonous or sharply trigonous	*Digitatae*
Carex hepburnei	lenticular or trigonous	*Nardinae*
Carex heteroneura epapillosa	trigonous, rarely lenticular	*Atratae*
Carex prionophylla	achenes normally lenticular	*Acutae*
Carex saxatilis	lenticular or infrequently trigonous	*Vesicariae*
Carex scopulorum	achenes normally lenticular	*Acutae*
Carex scopulorum chimaphila	achenes normally lenticular	*Acutae*
Carex specuicola	sometimes lenticular, sometimes trigonous	*Atratae*

Early into his book, Egorova (1999) reviews the terms that have been used for the "seed" of *Carex*, finding all of them unacceptable, especially nutlet & achene (*the later he feels should be reserved for the specialized fruit of the Compositae).* He seems to deftly avoid the existence of the achene for the remainder of the English portions of the book.

Carex has traditionally been split into four subgenera, *Carex* **(**or *Eucarex)*, *Indocarex*, *Primocarex,* & *Vignea,* & seventy plus spp groups after Kükenthal's (1909) monograph on the *Cariceae*. (*Numerous other classifications have been proposed.) Primocarex* has a terminal spike inflorescence with the other subgenera having branched inflorescences. *Vignea* has short bisexual spikes & lacks a cladoprophyll (the prophyll of lateral branches). *Vignea* has perigynia with a false suture on the abaxial side, which is not present in any other subgenera or any genera of *Cariceae*. (*The false suture is occasionally mentioned in some North American literature, occasionally in some keys, but seldom in the Midwest.) Indocarex* has bisexual spikes & perigynium-like cladoprophylls on secondary & tertiary branches. *Carex* has single sex spikes & ocreaeform cladoprophylls. (After Reznicek (1990), cited in Roalson et al (2002)) (*Ocreaeform, having a form similar to an ocrea, the tubular sheathing stipules in Polygonaceae)* The four subgenera are controversial, & may in part, be artificial. With modern research techniques, the spp groups seem in a constant state of revision. The data here will ultimately reflect the Flora of North America.

Cladoprophyllum

The following spp, native south of the United States, are described as having a cladoprophyll (or *cladoprophyllum*), a perigynia-like structure (Hermann 1974). The cladoprophyll is not present in all subgenera. The cladoprophyll is an utriculiform bracteole from which the branches of the inflorescence emerge. They are perigynia-like & are up to 3-3.5 cm long, 0.5 mm wide (in *C scaposa*).

spp	section

Carex aztecica Mackenzie	*Indicae*
Carex hultenii Asplund	*Indicae*
Carex madrensis Bailey	*Indicae*

Spp in the subgenus *Indocarex* have lateral spikes extending from cladoprophyll (cladoprophyllum) (Nelmes, 1951). There are very few (1) *Indocarex* spp in North America north of Mexico (fna).

Carex hangzhouensis CZ Zheng, XF Jin, & BY Ding, Section *Hangzhouenses* has branched spikes arising from sacculate cladoprophyll with a single developed pistillate flower. The fertile cladoprophyll also occurs in five other spp in eastern & southern Asia, those being Section *Japonicae*, *C satumensis* Franchet & Savatier, & Section *Mundae*, *C munda* Boott, *C fragilis* Boott, *C dissitiflora* Franchet, & *C yulongshanensis* PC Li. (Jin et al 2005)

Other sections of *Indocarex* have sterile, or empty cladoprophylls. Cladoprophylls are seldom mentioned in Midwestern literature, partially because there is only one sp of *Indocarex* native in North America north of Mexico. Indeed, there is very little mention of cladoprophyll in subgenus *Carex* in North America.

Common names

The 4th edition of Plants of the Chicago Region, Swink & Wilhelm (1994) presented a new batch of common names, or local names for the genus *Carex,* with many different from the common names in the 3rd edition, & Swink in The Key, used still other common names, with yet other common names found in lists from the Morton Arboretum. (*There was an apparent need to commonly call plants that are not commonly called.)* This makes life fun when some seed mixes are written solely by sedge common name, generally from the pink Swink & Wilhelm (1979) edition. These newer common names are often based on the morphology of the perigynia (handy if one constantly carries an ocular micrometer, hand lens & dichotomous key), & the names are often non-intuitive. But realistically, how can you improve upon a name like BICKNELL'S SEDGE? No disrespect intended, but COPPER-SHOULDERED OVAL SEDGE just does not roll off the tongue. And *C vulpinoidea* is still & will always be FOX SEDGE, look at its etymology. So is *C alopecoidea*. *Vulpes* & *alopex*- are from the same Indo-European root word, **ulp*, fox.

Even though it is not politically correct to use translations of the sp name to derive a common name, we do persist. This practice was suggested by Rock (1971), to provide uniform common names. Several high-powered web sites, including the USDA, use translated common names also, & many *Juncus* & *Eleocharis* have common names that are also literal translations of the specific epithet.

Any landscape architect or restoration designer who is silly enough to ask for sedges by common name & no further information deserve exactly what they get. Remember, there are no wrong common names. In addition, there are always colloquialisms. BOTTLEBRUSH SEDGE, which of the 4± bottle brush sedges would like? Hmmm… MEADOW SEDGE, no problem. AWL-FRUITED SEDGE, we got it! Many of the more "cool" common names were first seen in & borrowed without credit from Checklist of Vascular Plants of Wisconsin (Wetter et al 2001). An effort has been made to "collect" all common names seen while taking notes. Common name sources have not been recorded. Some British common names are included.

Much of the common sense descriptive information is from Fassett. Most of the entertaining descriptions are from Dick Young.

Growth habit & reproductive strategies.

Under Construction

All *Carices* are perennial. *C bebbii*, *C crawfordii*, *C synchocephala*, & *C viridula* may fruit first year & not persist, behaving as facultative annuals (Ball & Reznicek 2002). Other spp may live only 3-5 years.

Native seed companies have wrongly treated sedges as either bunch type, which slowly enlarge in a clump, or as rhizomatous, which may rapidly increase in size by way of underground stems. The confusion arises because almost all bunch type sedges have rhizomes (all spp have rhizomes (Ball & Reznicek 2002)), which are simply an underground stem with a root & a bud. *Carex* rhizomes may be small & inconspicuous in densely cespitose spp, leading some authorities to claim that rhizomes are absent. Other spp have long rhizomes & quickly form large swards, or colonies. Rhizomes may grow vertically, forming tussocks, as in *C stricta*, or as in spp that are adapted to shifting, drifting, dune sands.

Carex growth forms are three---matted, clumped, & tussock, differing by the rhizome structure. Matted sedges result from long, spreading rhizomes. Tussock sedges result from very short rhizomes with vertical growth. Clumped sedges produce a…….

Fernald uses "substoloniferous". Then there are always monopodial, amphipodial, & sympodial rhizomes, just to keep us humble.)

varying habits of *Carex*

The strongly rhizomatous sedge spp put a great deal of their reproductive energy into vegetative reproduction, with infrequent seed crops & low viable seed production. (Thanks to Ken Schaal (Bluestem Prairie Nursery) for discussing this idea on several occasions.) There are obviously some genetic factors going on here with some populations probably consisting of single, largely or total self-incompatible individuals. James Steffen agrees. *(Maybe this explains the proclivity towards hybrids in C lacustris in isolated clones, with no or few selfed offspring to compete with the hybrid offspring.)* Is it a genetic self-incompatibility kind of thing, or strictly a bloom sequence, or both? *(But does anyone know the male-female bloom sequence within an individual plant, or in an individual inflorescence or spike? Does anybody really care? Hmmm? Are the female flowers not receptive during anthesis? Is anthesis the right word?)*

However, that doesn't explain extreme variation in seed quantities in the rhizomatous spp from year to year. The literature favors self-compatibility for sedges due to the proximity or the male & female flowers. Nursery seed production & some wild harvest experiences favor self-incompatibility in some strongly rhizomatous sedges, especially in the sections *Acutae* & *Paludosae.* Some spp that have been increased by cloning produce largely empty fruits. There is also a hormonal aspect to the variable seed crops of spreading rhizomatous sedges.

Carices are wind pollinated but some insects are seen working the inflorescence of certain spp when flowering, with some incidental insect pollination probable. (Lubbs unpublished observations)

Hybridization occurs in the genus, within & between spp-groups. Hybrids maybe completely sterile, may produce infertile achenes, or some are fertile.

Each bud on a *Carex* plant is monocarpic, meaning that the developed shoot dies after it fruits. In some spp, all the above ground shoots are annual, some spp have shoots that are vegetative the first year, & flower the next year, or a subsequent year, & some have truly vegetative shoots. All flowering shoots die after fruiting, but some shoots die without flowering. In temperate regions, shoot life expectancy is from 12-24 months. In arctic or alpine areas, a shoot may live 7 years before flowering, occasionally up to 12 years. Spp with annual flowering shoots are aphyllopodic (the lower leaves are reduced to bladeless sheaths), also called lateral shoots, having buds lateral to last year's stem. Spp with multi-year shoots are phyllopodic (the lower leaves are complete with blades), with "the flowering stem produced from the apical meristem of the vegetative shoot from the previous year, the base of the stem is clothed in leaves of the previous year, in varying states of decay" (Ball & Reznicek 2002). These are also called central shoots. Distinguishing these types of stems is only possible in areas with cold winters.

The position of the meristem in the center of the old stem should be important to natural area managers & seed producers. Controlled burns, at the wrong time or of the wrong intensity, will destroy the reproductive shoots, reducing seed production. Reduced seed production reduces food available for granivores & seed predator & pathogens & reduces the bottom line for seed producers & sellers. *(One man's seed disease in another man's biodiversity.)* The above ground meristem also determines how over-wintered containerized plants should be trimmed back in the spring. Trimming too low & removing the buds will kill or severely stunt the plant. Been there, done that.

Most *Carex* produce only stems bearing inflorescences, with leaves basal or cauline. Most spp produce vegetative

Carex seed heads may mature & shatter while the perigynia are still green, or may persist until the perigynia are yellow or brown. Seeds may be harvested from late May through October.

Many sedges that have had germination studies are characterized by 1) strict or conditional primary dormancy, 2) a light requirement for germination, 3) low germination at constant temperatures, 4) a positive response to diurnal temperature fluctuations, & 5) an induction of secondary dormancy in late spring by increasing environmental temperatures. (Schütz 2000) With Schütz's findings in mind, restorationists should not expect results for summer seedings or plantings that use cover crops.

It was at one time very common to see or hear that fresh seed is necessary when propagating all carices. That was a silly generalization for any group of plants, especially for such a large genus. Dried seed works well with almost every spp that we have tried growing. A few sedges are non-dormant upon ripening, & may germinate the year they are formed, & some are conditionally dormant, but few have been noted as recalcitrant, including *Carex flava* & other ant dispersed spp, the *Carex laxiflora* group, *C plantaginae*, *C pensylvanica. C platyphylla*, *C rosea*, *C radiata* & the Appalachian endemic sedge *Cymophyllus fraseri* (also includes) (Cullina 2004b, 2008, Prairie Moon nd.). Several wetland spp have been reported to decline in viability with dry storage. It may be necessary with some spring ripeners to sow them soon, possibly to expose the seed to benign soil organisms before seed borne diseases (smut) kill the seed in storage (*doubtful*), but it is more likely necessary to keep the seeds at ambient soil moisture levels. Known & suspected hydrophilic spp should be dried for a week, cleaned & placed in air-tight containers under refrigeration until being sown. *(It is one of the few good rules of thumb in this industry to sow any spring ripening seed in the spring*.) Realistically, dormancy rather than freshness is the key issue in propagation. Our experience with TZ & germination tests indicate viability is not lost in drying, though many spp are highly dormant & will benefit from 90 to 120± days cold moist stratification. Wm Cullina (2008) stratifies all carices he propagates for 90-120 days. (*Try cold moist stratifying some Carex seeds for 12-18 months, & they'll grow like dog hair.)* Many spp germinate quite readily when fully developed, well-ripened, cold dry stratified seed is sown in a warm location in a green house. (*Many, but not all, Ovalian sedges produce good green house crops without pretreatments*). The seed must be in good contact with the soil to imbibe water, technically water vapor. Removing the perigynia of spp where the achene does not fill the inflated perigynia, as in *C grayi* or *C intumescens*, is necessary to establish seed soil contact, plus dormancy mechanisms have been found in the perigynia of some spp (*C aquatilis, C straminea*). Placing the seeds in cloth bags & leaching the seeds in running water for two days can also remove the growth inhibitors present in the perigynia.

Our data generated from seed testing (for seed sales) indicate many spp, including *C stipata,* are non-dormant, requiring no cold dry storage & can potentially germinate within weeks after ripening.

Caric sedges with achenes heavier than 0.9 mg are relatively highly dormant, for as seed size increases, seed coat thickness increases, restricting germination (physical dormancy). There should be a relationship between seed count & dormancy levels, with dormancy decreasing as seed count increases. This relationship can be painfully obvious in the greenhouse when growing large-seeded sedges such as *C grayii* or *C tuckermannii,* or the hop sedges. This is also observed in the genus *Scirpus* (the old traditional genus, not the splitter's delight), with large seeded spp dormant as door nails. Stratify early & stratify often. Hull it, Baby.

Carices can be arbitrarily grouped as non-dormant, mostly non-dormant, mostly dormant, & dormant. But to make life interesting, some spp have wide swings in dormancy levels from year to year. (Genesis seed test data). Tentative graph see sedgesedges5.pdf on the CD for a better graph.

Obviously, some spp are more effectively field sown as dormant seedings only, while some can be sown into the spring as dry stratified seed.

A problem common to most published *Carex* germination studies is a lack of baseline data. All lots used for germination tests should be tested by an independent registered AOSA seed technologist for purity, TZ, & germination. Crop year & harvest date, genetic source & production source, & hulled vs. unhulled seed should be reported.

Mature perigynia are necessary for identification. The range of sizes given in most texts is based on well-grown perigynia from the middle of a spike. It does not include immature or diseased ones, or perigynia from the base or summit of the spike, which are often smaller

THERE ARE SPECIES LISTED HERE THAT ARE NOT AVAILABLE AS SEED OR PLANTS ANYWHERE, EVER! THERE ARE SPECIES IN HERE THAT ARE NOT NATIVE TO THE MIDWEST, or North America. Anything marked with a Δ we have as either onsite, as seed or as plants, or we are growing & will have it soon. If it is not marked with a Δ , we do not have it & it is listed solely for our informational purposes only. Don't order it. Don't put it in job specifications. Forget you ever saw it. It aint out there. Go drink heavily & kill those brain cells.

helps give a better appreciation for a complex genus & for distribution of various spp. A sedge that is common in Illinois (or any plant for that matter) may commonly be a listed sp in a nearby state. Note the sp' status in the comments. This should influence how plant-people use sp in commercial restoration. Should we send listed spp to other states? Should we be willy-nilly extending a sp range? Is it responsible to extend a sp northward as we experience global warming? Are plant distribution data truly realistic? Surely, distribution data is not realistic in northwest Illinois, & there are bound to be other botanical backwaters. (*Some northwest Illinois cos are more like "botanic black holes" of plant records, as few, if any, herbarium specimens have escaped Bureau & Whiteside cos*).

Many western & cordilleran spp are included in this discussion for comparative dormancy & propagation information. Other spp are listed as a record of mycorrhizal status.

Ecology

Warning Much of the seed of the vigorously rhizomatous spp is dead when you buy it, regardless of how well cleaned the seed is or how sleek & colorful the nursery catalog, or how many times a year you get catalog copies. Insist on tested seed when ever reasonable & possible.

Many carices are subject to seed-born pathogens. *C lacustris* is known to be infected by a black, smut-like infection in the perigynia (Richard Agnew, personal communication), as is *C pensylvanica* (Fassett 1931). Cochrane et al (2006) shows a photograph of a "blasted" or infected perigynia of *C lacustris*. Merel R. Black has an excellent photo of Penn Sedge smut on wisplants.uwsp.edu/scripts/detail.asp?SpCode=CARPEN1. *Carex blanda* is known to be occasionally infected with the smut fungus *Anthracoidea blanda*. (http://www.ku.edu/~eeb/faculty/alexanderh.html) *Carex rariflora, C limosa*, *C limosa X rariflora*, & *C magellanica* are subject to infection with *Anthracoidea limosa* (H. Syd.) Kukk. (*Ustilaginales*) (McIntire & Waterway 2002, & Vanky 1994). *A. limosa* is a "nonsystemic ovaricolous smut fungus that annually infects host *Carex* plants, enabling the production of fungal teliospores at the expense of host seed development". (Ericson, Burdon, & Wenström 1993, Salo & Sen 1993). *Anthracoidea* is related to the fungi that cause smut in oats, barley, & corn. *Carex nigra* is known to be infected with *A. heterospora* & the gall mite *Phytoptus carcis* (Ingvarsson & Ericson 1998, 2000). Many parasitic smut fungi are *Carex* sp specific, & can be important markers to determine phylogenetic relations (Nannfeldt 1968, 1977). The truth is out, caricologists must be in it for the smut.

Waterfowl, marsh birds, shorebirds, & upland game birds, including wild turkey & ruffed grouse chicks, eat the seeds. Terrestrial furbearers (esp. rabbits & squirrels) eat seeds & leaves, a common winter & early spring food. Some say deer & rabbits do not eat the leaves, but our experience shows *C blanda* is a preferred winter food of rabbits, & severe rabbit damage occurs on many spp, even to the point of rabbits ripping the plastic to enter our coldframes. Grey & Fox squirrels eat the seeds. Livestock eat the leaves. Deer eat seeds, leaves, & roots. The common mole is known to forage on *Carex* roots. Shoreline spp provide important habitat for invertebrates, breeding amphibians, & small fish.

Carex seeds have been found in the preserved dung of Imperial Mammoths.

Carex herbivores include *Stethophyma celata* OTTE'S SEDGE GRASSHOPPER, *Stethophyma lineata* STRIPED SEDGE GRASSHOPPER, & the leafhoppers *Cosmotettix bierni, C lineatus, C luteocephalus,* & *Elymana inornata.*

Several spp are larval hosts for butterflies, skippers, & moths.

Caterpillars of Butterflies, Skippers, & Moths
Feeding on Carex spp

Butterflies	
Satyrodes appalachia	APPALACHIAN BROWN
Satyrodes eurydice	EYED BROWN
Skippers	
Euphyes bimacula	TWO-SPOTTED SKIPPER
Euphyes dion	DION SKIPPER
Euphyes dukesi	DUKE'S SKIPPER
Euphyes vestris	DUN SKIPPER
Euphyes conspicuus	BLACK DASH
Poanes viator	BROAD-WINGED SKIPPER
Poanes massasoit	MULBERRY WING
Polites mystic	LONG DASH
Moths	

Simyra henrici HENRY'S MARSH MOTH

Birds Eating the Seeds
of *Carex* spp

Aix sponsa	WOOD DUCK
Ammodramus henslowii	HENSLOW'S SPARROW
Anas discors	BLUE-WINGED TEAL
Anas platyrhynchos	MALLARD
Bonasa umbellus (young birds)	RUFFED GROUSE
Calcarius lapponicus (winter)	LAPLAND LONGSPUR
Cardinalis cardinalis	CARDINAl
Eremophila alpestris	HORNED LARK
Fulica americana	AMERICAN COOT
Himantopus mexicanus	BLACK-NECKED STILT
Junco hyemalis (winter)	SLATE-COLORED JUNCO
Meleagris gallopavo	WILD TURKEY
Melospiza georgiana	SWAMP SPARROW
Melospiza lincolnii	LINCOLN'S SPARROW
Melospiza melodia	SONG SPARROW
Passerculus sandwichensis	SAVANNAH SPARROW
*Passerina ciris**	Painted Bunting
Phasianus colchicus	Ring-Necked Pheasant
Pipilio erythrophthalmus	Eastern Towhee
Plectrophenax nivalis (winter)	Snow Bunting
Porzana carolina	Sora
Rallus limicola	Virginia Rail
Scolopax minor	American Woodcock
Spizella arborea	Tree Sparrow
Tympanuchus cupido	Greater Prairie Chicken

Dispersal

The spongy, corky, or inflated perigynia of many spp are an aid to water dispersal. (*The normally lanceolate perigynia of C microptera are occasionally inflated with trapped air.* (Hurd et al 1998)) It is interesting to note that some perigynia have spongy material lateral to the achene, opposed to the spongy perigynia base of some spp. (*Lateral versus basal spongy material is a distinguishing characteristic in some spp.*) The broadly winged perigynia of some section *Ovales* spp are said to be an adaptation for wind dispersal (in open areas with thin vegetation?) & an aid in adhesion to animal fur & feathers. Birds consume & transport sedge seeds, including sedges without elaiosomes or fleshy perigynia. Studies of seeds from stomachs of birds indicate some *Cyperaceae*, including *Carex***,** survive ingestion by birds. It is postulated some sedge seeds survive inside birds long enough to fly from one polar region to the opposite pole, one possible explanation for the existence of bipolar carices. By comparison, grass & composite seeds only last up to four hours in the gullet of a bird.

Elaiosomes are present on some *Carex* spp, although elaiosomes are seldom noted as such in detailed descriptions or dichotomous keys. *(Gleason & Cronquist, 1991, is an exception, using elaiosome in the description of C pedunculata. Their description of the sometimes-fleshy perigynia of C aurea is also interesting.) (Elaiosomes are specialized appendages, or extensions of tissue high in lipids & proteins. BLOODROOT, TOOTHWORT, TRILLIUM & VIOLET seed have elaiosomes, as do several Carex. Elaiosomes attract ants (& other animals) that disperse the seeds. Some elaiosomes have the same chemistry as insect prey spp & attract carnivorous ants. The seeds with elaiosomes are collected & brought to the ant colonies. The elaiosomes are consumed, while the seed is unharmed & deposited in underground trash areas, or ant middens, areas suitable for germination, free of competition & often enriched with feces & carcasses.)* The dispersal of elaiosome-bearing *Carex* by ants has been well documented (Beattie & Culver 1981, Gaddy 1986, Handel

dry sandstone hill prairies & gravelly kames, is also ant-dispersed (Ilpin). Cullina (2008) notes *C flava* as ant-dispersed. The perigynia may be described as having a "spongy thickened base", but not always. Ant dispersal is an adaptive advantage of dispersal into open microsites where seedlings may establish with little competition. Ant dispersed carices are less stress tolerant than other woodland sedges, relying on greater dispersal, higher germination rates, & faster growth to occupy briefly open microsites in a range of environmental conditions (Grime1979).

The germination requirements of *C pedunculata* may represent an adaptation to ant dispersal. It requires light to germinate at maturity, but with dry storage, gains the ability to germinate in the dark. This would mimic gathering, consuming the elaiosome, & discarding the seed underground or buried in a midden by ants. (Bond 1999)

Carex spp known to be ant dispersed are usually described as having a "spongy" base. The following list is based solely on the presence of a thickening at the base of the perigynia, not on proven ant dispersal. Several spp are also noted as having a corky base. This list may include some potentially ant-dispersed spp, or spp that have other mutualistic relationships, or wetland spp that disperse by water. These "thickenings" may not be significant, as many known ant-dispersed spp are forest sedges, opposed to the many listed wetland & full sun spp. Perhaps they attract other critters. Perhaps they have an all together unknown agenda. Note this list contains spp not native to northern Illinois or the Midwest & contains uncorrected names & spp groups. Moreover, this list is far from complete.

Species	**Description**	**Section**	**source**	**Nat. wet. ind.**
C alma	"spongy at the base"	*Multiflorae*	5	OBL
C alopecoidea	"spongy-thickened … at the base"	*Bracteosae*	1	FACW,OBL
C arcta	"somewhat spongy … stipitate base"	*Heleonastes*	5	OBL
C atlantica	"spongy-thickened at the base"	*Stellulatae*	2	FACW,OBL
C aurea	"often becoming fleshy"	*Bicolores*	5	FACW,OBL
C aztecica	"spongy at the stipitate base"	*Indicae*	4	
C backii	"base spongy"	*Phyllostachyeae*	3,6	
C blanda	"base spongy"	*Laxiflorae*	3	FAC*,FAC
C bromoides	"spongy tapered base"	*Deweyiana*	1,2	FACW,FACW+
C brunnescens	"broadly tapered spongy base"	*Heleonastes*	1,2	FAC,OBL
C canescens	"the spongy base"	*Heleonastes*	2,5	FACW+,OBL
C conjuncta	"base spongy-thickened"	*Vulpinae*	1	FAC, FACW
C crus-corvi	"spongy-thickened at the base"	*Vulpinae*	1,2,3	OBL
C cusickii	"spongy-thickened … at the base"	*Paniculatae*	5,6	
C deweyana	"very spongy at the base"	*Deweyiana*	3,5,6	UPL,FACU
C diehlii	"stipitate spongy base"	*Ovales*	4	
C dioica	"lower portion spongy thickened	*Dioicae*	5	
C disperma	"base spongy & rounded"	*Heleonastes*	2,3,5	FACW*, OBL
C ebenea	"round tapering spongy base"	*Ovales*	5	
C echinata	"spongy-thickened at the base"	*Stellulatae*	2,5	OBL*OBL
C geyeri	"the somewhat spongy base"	*Firmiculmes*	5	
C gravida	"spongy base"	*Bracteosae*	1	
C gynocrates	"spongy base"	*Dioicae*	6	OBL
C heliophila	"base spongy"	*Montanae*	3	
C hitchcockiana	"base spongy"	*Oligocarpa*	3	
C humboldtiana	"spongy at the stipitate base"	*Indicae*	4	
C illota	"slightly spongy at the base"	*Ovales*	5	FAC,OBL
C interior	"spongy-thickened at the base"	*Stellulatae*	2,3,5	FACW-,OBL
C jamesii	"base spongy"	*Phyllostachyeae*	1,3	
C jonesii	"slightly spongy at the base"	*Vulpinae*	5	FACW,FACW+
C laeviculmis	"spongy base"	*Stellulatae*	6	FACW*,FACW
C laevivaginata	"base… spongy-thickened"	*Vulpinae*	1,2	OBL
C laxiflora serrulata	"spongy at the stipitate base"	*Laxiflorae*	4	UPL*,FACU*

C microglochin	"spongy"	*Orthocerates*	5,6	FACW+,OBL
C neurophora	"somewhat spongy at the base"	*Vulpinae*	5,6	FACW*,FACW
C oligocarpa	"base spongy"	*Oligocarpa*	3	
C pachystachya	"margins often filled with spongy tissue"	*Ovales*	5,6	FACU,FACW
C peckii	"base spongy"	*Montanae*	3	
C pedunculata	“cuneate base … spongy”	*Digitatae*	1,3	
C pellita	"somewhat spongy,"	*Hirtae*	5	OBL
C pensylvanica	“the stipe thick”	*Montanae*	1	
C percostata	"base very spongy"	*Multiflorae*	4	
C physorhyncha	"spongy at the stipitate base"	*Montanae*	4	UPL,FACU
C planostachya	"substipitate at the spongy base"	*Triquetrae*	4	
C polystachya	"spongy at the stipitate base"	*Indicae*	4	
C praegracilis	"base spongy stipitate"	*Divisae*	3,5	UPL*,FACW+
C preslii	"slightly if at all spongy"	*Ovales*	6	FACU*,FACU
C purdiei	"spongy at the stipitate base"	*Ovales*	4	
C radiata	“cuneate at the spongy base”	*Bracteosae*	1	
C retroflexa	"spongy at base"	*Bracteosae*	3	
C richardsonii	“tapered into a spongy stipe”	*Digitatae*	1	UPL,FAC-
C rosea	"spongy & round at base"	*Bracteosae*	1,3	
C saximontana	"base spongy"	*Phyllostachyeae?*	3,6	
C seorsa	“more or less spongy thickened at the substipitate base"	*Stellulatae*	2	FACW,FACW+
C simulata	"the base spongy"	*Divisae*	5	FACW,OBL
C sterilis	“ spongy-thickened at the base”	*Stellulatae*	2,3	OBL
C stipata	“bodies … spongy-thickened”	*Vulpinae*	1,2,3,5	OBL
C synchocephala	"base spongy"	*Ovales*	3	FACW,FACW+
C texensis	"strongly spongy at base"	*Bracteosae*	1,3	
C tonsa	“spongy stipitate”	*Montanae*	1	
C townsendii	"spongy at base"	*Stellulatae*	4	
C trisperma	“thick coriaceous to spongy”	*Heleonastes*	2	OBL
C turbinata	"spongy at the stipitate base"	*Montanae*	4	
C umbellata	“the stipe thick, spongy”	*Montanae*	1	
C volcanica	"spongy base"	*Ovales*	4	
C vulpinoidea	"spongy-margined to the rounded base"	*Multiflorae*	5	OBL
Sources	ws92	Hermann, 1970		
m05	Hermann, 1974	Kolestad		
Hurd et al, 1998		3		
		6		

Descriptions are representative where multiple sources are listed.
National wetland indicator values are used
Species groups do not reflect current usage as of July 2006

The sheer number of eastern North American & Great Plains spp with “spongy bottoms” over 10% of the 600 ± North American spp, seems to indicate ????????????? Well, something is going on that we have not picked up on, perhaps a broad trend towards insect or animal seed dispersal, or floatation. As forty five percent of the spp listed do not occur, & others only occasionally occur in wetlands, their spongy tissue is probably not an adaptation for water dispersal.

Some of the bulbous based spp are noted by Mohlenbrock (1999) as spongy-bases that wrinkle upon drying, possibly noting a perishable aspect to these potential elaiosomes. These spp include *C rosea*, *C radiata*, & *C socialis (often autocorrected to C socialism by Bill Gates' MS Word)*

pregermination treatments (Bill Carter personal communication). The perigynia of many *Carex* spp should be evaluated for fat &/or & protein content.

Carex were generally considered non-mycorrhizal, although some northern Illinois carices have been found with unusual mycorrhizal infections. In northeast Illinois, Miller et al (1999) examined 151 individuals finding arbuscular fungi in 16 out of 23 spp sampled. *(According to Miller, (personal communication) some carices may be mycorrhizal; they really don't seem to care one-way or the other.)* With data is from Muthukumar et al (2003), of 76 *Carex* spp & varieties recorded, 25 were mycorrhizal, 4 were facultatively mycorrhizal, & 47 were nonmycorrhizal. There are no commercial inoculants that work with *Carex.*

Carex have C3 carbon metabolism.

The genus *Carex* is usually separated into a number of "species-groups". Species groups generally have structural similarities, similar general aspect, & habit, & may (added emphasis) have similar dormancy characteristics.

INFORMAL "FASSETT" MORPHOLOGICAL GROUPS

Foenea (Sartwellii) Group (*Arenaria, Chordorrhizeae*)

Plants slender, rhizomatous; leaves 1.5-4.5 mm wide; spikelets all similar, short sessile, crowded near culm apex, brown; perigynia small, brown; stigmas 2.

Includes *foenea, chordorrhiza*, & *sartwellii*

Rosea (*Convoluta*) Group (*Bracteosae*)

Plants caespitose, spikelets short, sessile; staminate flowers at apex of each spikelet, a tiny club-shaped mass of whitish scales remaining after anthesis; perigynia plano-convex, ovate, nerveless on flat face except *C muehlenbergii,* green at maturity, but becoming yellowish to red when dehiscing; stigmas 2

Includes *convoluta, sparganioides, cephaloidea, cephalophora, muehlenbergii*, & *gravida*.

Stipata Group (*Vulpinae, Multiflorae, Paniculatae*)

Plants caespitose, inflorescence compound, of many tiny crowded sessile spikelets, each group of which resemble a single spikelet; perigynia green to brown, plano convex, nerveless on the flat face

Includes *stipata, vulpinoidea, annectens, alopecoidea, prairae, & diandra.*

Interior Group (*Stellulatae*)

Plants small, slender, caespitose; leaves 1-3 mm wide; spikelets all similar, sessile, as broad as long, with staminate scales at bases; perigynia divergent or reflexed, giving spikelet a star shape when viewed from above. Mostly in wet very acid or very alkaline soils in the sun.

Includes *interior, sterilis, cephalantha, angustior*

Deweyana Group (*Deweyanae*)

Plants caespitose; spikelets sessile, small, all alike, longer than broad; perigynia slender, green, 4-5.5 mm long, closely appressed & hidden by the scales fitting tightly over the plump achenes, but with the beaks empty; stigmas 2.

Includes *deweyana* & *bromoides*

Scoparia Group (*Ovales*)

Plants caespitose, slender, 1-15 dm tall, spikelets all alike, short sessile, perigynia thin & scalelike, with translucent margins or wings, wind dispersed, mostly appressed & all or all but the beaks hidden by the scales, becoming brown at maturity; staminate flowers confined to tapering spikelet bases; stigmas 2. Diagnostic perigynia shapes not distinctive until about July, & then several perigynia must be observed to determine shape & proportions.

Includes *scoparia, bebbii, tenera, crawfordii, muskingumensis, tribuloides, projecta, normalis, cristatella, bicknellii, meritt-fernaldii, brevior, molesta, adjusta, & aenea.*

Scoparia, Bebbii, tenera, & crawfordii are common plants, 1-5 dm tall, leaf blades 1-4 mm wide; without pseudoculms perigynia less than 2 mm wide except rarely in *scoparia*.

Muskingumensis, tribuloides, projecta, normalis, & cristatella are somewhat larger plants with slender pseudoculms, leaves 2-10 mm wide, & perigynia less than 2 mm wide , except for *muskingumensis*, slenderly lanceolate.

Bicknellii, meritt-fernaldii, brevior, & *molesta* have perigynia ovate, beaked, & 2.2 - 4.2 mm wide (Fassett)

(*Briefly study the dichotomous key in Gleason for the section Ovales. Many spp are keyable by more than one path, indicating routine variability of some characteristics in some spp.) (Some Illinois native Ovales have over wintering decumbent stems that root at the nodes! (Lubbs unpublished data, Ball & Reznicek 2002), including C tribuloides, C projecta, C longii, & C ozarkiana. Other Ovales sedges have vegetative stems that are annual.)*

Includes *pensylvanica, abdita, umbellata, peckii, emmonsii, communis, deflexa, pedunculata, richardsonii, concinna, hirtifolia, jamesi*i, & *backii*.

Tetanica Group (*Granulares*, in part, *Paniceae*)

Low rhizomatous sedges with slender culms, pseudoculms, & slender V-shaped leaves, covering areas 1-20m in diameter. Bases brown, except in *C woodii* (purple) & *C tetanica* (?). Spikelets slender, elongate, 5-20 flowered, borne all along the leafy bracted culms as long as the leaves. Perigynia 14-30 nerved, green, ovoid to bluntly triangular & somewhat asymmetrical, stigmas 3, staminate spikelet long-stalked & round scaled.

Spp include *tetanica, meadia, woodii, crawei, livida, & vaginata* (Group description after Fassett).

Blanda group (*Granulares* in part, *Laxiflorae, Oligocarpae*)

Low solitary, caespitose sedges, 5-20 cm tall, plant bases brown-red purple, vegetative shoots (pseudoculms) much wider than those bearing flowers do. Leaves short, broad, conspicuously pleated (M-shaped) sheaths loose, culms soft, triangular, spikelets slender, elongate, 5-20 flowered, borne all along leafy-bracted culms as long as the leaves. Perigynia green, stigmas 3, staminate spikelet 1.

Spp include *blanda, ormostachya, albursina, leptonervia, digitalis, plantaginea, grisea, oligocarpa, hitchcockiana, conoidea, & granularis*,

Gracillima group (*Gracillimae, Sylvaticae, Capillares, Longirostres, Anomalae*)

Culms longer than the leaves spikelets long-pedunculate, arching or drooping, borne near the culm apex; perigynia small, mostly green, symmetrical (except *C scabrata*) few nerved; stigmas 3, terminal spiketlet(s) wholly or partially staminate.

Includes *gracillima, arctata, sprengelii, davisii, prasina, debilis, scabrata, castanea, capillaris, & assiniboinensi*s.

Flava group (*Extensae*)

Plants slender, 2-80 cm tall, flowering all summer; leaves 1-5 mm wide, bases brown, spikelets 2-10 mm long, crowded at culm tip, only about twice as long as wide; perigynia divergent at right angles to axis or reflexed, strongly nerved, abruptly beaked; stigmas 3, staminate spikelet. Moist sandy or limy places

Pellita Group (*Hirtae* or *Carex* proper). *(This section contains the type sp for the genus, the European Carex hirta.)*

Medium sized common rhizomatous sedges, with numerous short pseudoculms bases reddish, with pinnate fibrillose sheaths; pistillate spikes 1-3, ascending, remote, 1-4 cm long; perigynia small, globose, pubescent; scales often minutely fringed on margins; stigmas 3; staminate spikelets 1-3. Includes *pellita, lasiocarpa*, & *houghtoniana*.

Buxbaumii Group (*Atratae*)

Mostly Arctic sedges, with dark purple scales & plump pale blue green perigynia; stigmas 3.

Stricta Group (*Acutae, Cryptocarpae*)

Abundant spp, conspicuous or dominant in respective habitats. Plants 30-150 cm tall; bases often reddish & pinnate-fibrillose; leaves long & slender; inflorescence arching, with 3-9 slender, many flowered pistillate spikelets below several slender staminate; perigynia 2-3 mm long, stigmas 2; achenes flattened. Plant often forming dense tussocks, but *stricta, emoryi, haydenii, & aquatilis* also spread by elongate rhizomes.

Includes *stricta, emoryi, haydenii, aquatilis*, & *crinita.*

Hystericina group (*Pseudo-Cyperae*)

Robust, mostly caespitose sedges; bases red brown, pinnate fibrillose; staminate spikelets 1-3 above clustered, stalked, erect, or drooping pistillate spikelets that are thick-cylindrical; perigynia inflated & scales abruptly narrowed near base (?) into a long awn; stigmas 3.

Includes *hystericina, comosa*, & *lurida*

Lacustris Group (*Vesicariae* in part, *Paludosae*)

Coarse rhizomatous sedges, forming large monotypic stands to 10 m across; numerous pseudoculms 0.5-1.5 m high, usually taller than the fruiting culms. Bases reddish & pinnate fibrillose (except *C rostrata*), spikelets ascending, cylindrical, 2.5 cm long (short ovoid in *C oligosperma*), scattered on erect culms, the lower 1-4 pistillate, the upper 2-5 staminate; scales acute; perigynia somewhat inflated, stigmas 3; shallow water & wet soils.

Includes *lacustris, atherodes, laeviconica, rostrata, & oligosperma.*

Typhina Group (*Squarrosae*)

Caespitose sedges with reddish bases & pinnate fibrils; spikelets 1-4 globose or cylindrical 1-2.5 cm thick, densely packed, persistent, staminate at the base, obconic or obovoid perigynia abruptly contracted into a beak; stigmas 3.

Lupulina Group (*Vesicariae* in part, *Lupulinae, Folliculatae*)

Robust, caespitose sedges, 3-13 dm tall, bases often red & pinnate-fibrillose; upper 1-4 spikelets staminate, the lower 2-5 pistillate, 1-8 cm long; perigynia large, greatly inflated, usually glabrous, persistent into autumn, well adapted

The working descriptive format will be, over time, as in Flora of the Great Plains: general form roots culms leaves sheaths heads spikes pistillate scales perigynia, achenes stigmas, preceded by habitat, distribution/range:, followed by comments. This is a working dockument, full uv miss steaks.

Common names are being presented alphabetically within the sp, with no respect or preference for local usage. Common names are an important part of the culture, history, lore, & allure of plants. None are incorrect.

The one-line synonym referrals are largely the views of Swink & Wilhelm (1994). The etymology of many specific epithets is originally from Wilhelm & Swink (1992), with other numerous uncited sources. (*New Latin refers to Latin used since the end of the medieval period, in special reference to scientific description & classification.)* Illinois distribution data is from Mohlenbrock 2002. Section data will ultimately reflect Flora of North America (fna). Chromosome numbers are largely from FNA.

Detailed descriptions are not an immediate goal, but will be worked in eventually. Characteristics that are key to the sp ecology will be done first.

Un-named hybrids are listed under both parent spp. As of July 2006, named hybrids are not listed under the parent spp.

Commercially Available Sedges

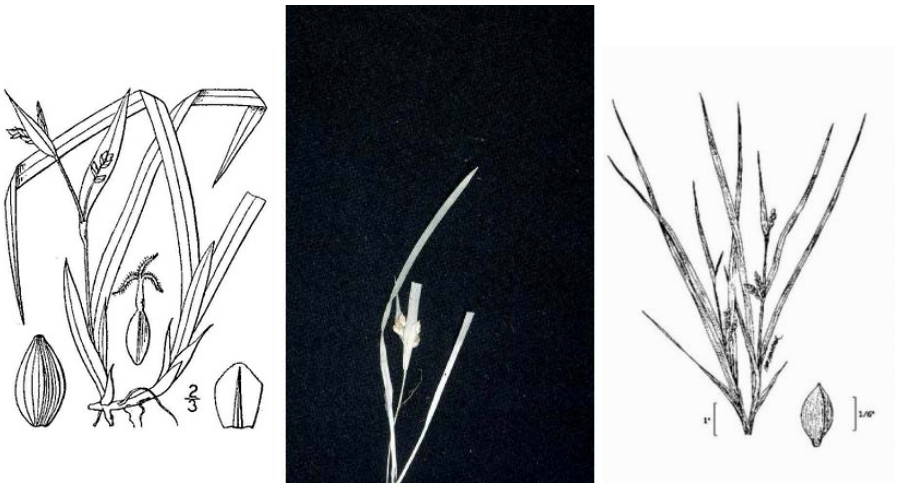
The following are available in some form, but are not treated herein.

Carex amplifolia, C densa, C laeviculmis, C lyngbyei, C macrocephala, C mertensii, C pachystachya, C pansa, C simulata, & C tumulicola.

Carex abdita EP Bicknell (*abditus -a -um* hidden, from Latin *abditus*, concealed, secret, hidden) (Pensylvanica group Fassett) Section *Acrocystis* (*Montanae*)
Habitat: Dry limestone prairies. Dry prairies, dry woods, & sandy soil. (m02) Forms dense patches in gravel hill prairies (ewf59). distribution/range: Throughout Illinois but more common in the northern cos.
Description: Erect, small-tufted, perennial, native sedge; culms 5-15(54) cm tall, plant bases brown to red purple; leaves; sheaths; heads; spikes staminate spikelet 1; pistillate scales 2.5 x 1.5 mm; perigynia minutely pubescent, with only 2 ribs; 3 x 1.5 mm, beak 0.5 mm; stigmas 3; N; key features: "Aspect - most or all culms shorter than or hidden by leaf bases; older fertile culms persistent. Peduncles 2-4 per culm, 1 elongated with male & female flowers, others short & only female leaves less than 3.0 mm wide, thin, soft. Pistillate scales acute. Perigynia - 1) beak 0.5-1.0 mm l; 2) body about 2xl. beak; 3) body broadly ellipsoid-ovoid-subglobose." (Ilpin)
Comments: status: phenology: Blooms April to May-June. Blooms April – May (m02). Plant & perigynia similar to *C pensylvanica*. Elongate rhizomes not present. Lower spikelets hidden in or close to leaf bases. This or *C tonsa* grows on Doug's Knob at Nachusa Grasslands.
VHFS: Formerly considered a form of *C umbellata.* Sw94 consider this *C umbellata.* M05 does not. Ilpin place *C microrhyncha* Mack & *C umbellata* Schkuhr in synonymy. [*C umbellata* Schkuhr misapplied (m02)]

Carex abscondita Mackenzie *NY THICKET SEDGE, (*absconditus -a -um* hidden, concealed, from Latin *absconditus*, participle of Latin *abscondo, abscondere, abscondi, absconditus,* to hide, to conceal, to secrete.)
Habitat: Rich, moist, deciduous or deciduous-evergreen woods (afne). Rich, moist wet slopes & bottomlands, just above the floodplain of streams & rivers (fna). 8. distribution/range: East & south of our area
Culture: Growth rate slow. Seedling vigor low. Vegetative spread rate none. Spreads slowly from seed. USDA says this is routinely commercially available, but we are not aware of a commercial source of seeds or plants.

culture: Tolerant of medium & fine textured soils. Anaerobic tolerance high. CaCO3 tolerance medium. Drought tolerance low. Fertility requirement medium. Salinity tolerance none. Shade tolerant. pH 4.8-6.
Description: Erect, perennial, native sedge; roots 6" minimum depth; culms bunching; N 2n = ?; key features:
Comments: status: Threatened in New York phenology: Blooms
VHFS: [*Carex abscondita* Mack var *glauca* (Chap) Fern, *C abscondita* Mack var *rostellata* Fern, *C magnifolia* Mack, *C ptychocarpa* Steud, Syn Pl Glumac, 234. 1855, not Link 1799]

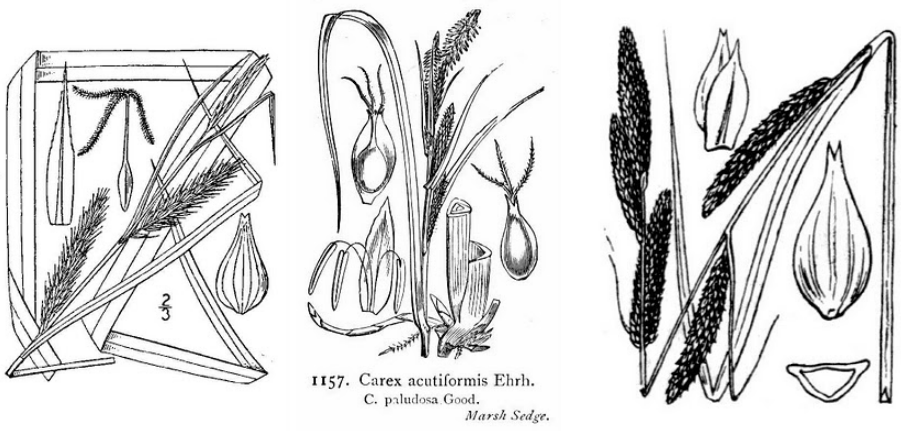


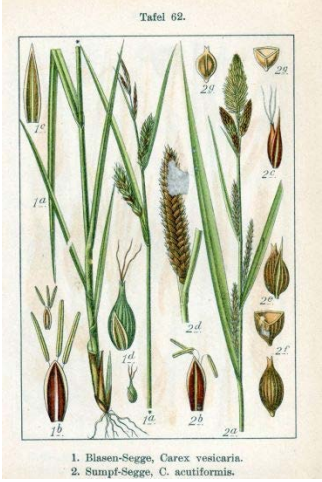
Carex abscondita

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Photo Robert H. Mohlenbrock USDA-NRCS PLANTS Database Not copyrighted images. 2nd line drawing Mark Mohlenbrock, USDA-NRCS PLANTS Database / USDA NRCS *Wetland flora: Field office illustrated guide to plant spp.* USDA Natural Resources Conservation Service. Not copyrighted image.

Carex acnescens?? is non-mycorrhizal. This is cited by Muthukumar but is a typo for *C canescens*. Cited from Raab et al (1999) Soil amino acid utilization among spp of *Cyperaceae*, plant & soil processes. Ecology 80:2408-2419

Carex acutiformis Ehrhart LESSER POND SEDGE, AKA MARSH SEDGE, *SUMPF-SEGGE,* (*acutiformis -is -e*, in the shape of or in the form of a point; alternately with the form of *Carex acutus*) Subgenus *Carex* Section *Paludosae*
Habitat: Known from the shore of St. Joseph Lake at Notre Dame. In New England, it grows in open swamps, wet thickets, borders of saline marshes, boggy meadows, & lake shores (afne). distribution/range: Introduced from Europe. An uncommon & local introduction in Connecticut, Indiana, Maryland, Massachusetts, & New York.
Culture: Sow at 20ºC (68ºF), if no germination in 3-4 wks, move to -4 to +4ºC (24-39ºF) for 2-4 wks, recycle (tchn). There are no commercial sources of seeds or plants.
Description: Erect, perennial, introduced sedge; loosely cespitose, rhizomatous, & colony forming, rhizomes long creeping; N 2n = 78. key features: "It superficially resembles *C aquatilis*, but is larger, has 3 stigmas, & has strongly veined perigynia 3–4.5 mm." (fna)
Comments: status: phenology: Blooms ? Fruits June to August. Forms large, glaucous clones, but does not seem to spread aggressively into adjacent habitats.
VHFS: [*Carex paludosa* Good var *kochiana* (DC) Husn]





Carex acutiformis

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Carex adusta Boott LESSER BROWN SEDGE, aka BROWN OVAL SEDGE, *CAREX BRÛLÉ,* (*adustus -a -um* burned by the sun, soot colored, scorched, charred, swarthy) Subgenus *Vignae* Section *Ovales*
Habitat: Dry, open, sandy woods & clearings, in acid soil (afne). distribution/range: Central Wisconsin.
Culture:
Description: N 2n = 78. key features:
Comments: status: phenology:
VHFS:

Carex adusta

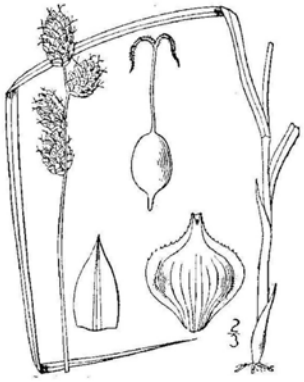
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Carex aggregata Mackenzie CLUSTERED SEDGE, aka CROWDED SEDGE, GLOMERATE SEDGE, SMOOTH CLUSTERED SEDGE, (bunched, crowded, in dense clusters, aggregated, joined together, from Latin *aggregatus -a -um*, collected, clustered, united, from *aggrego*, I attach to, connect with, bring together, collect, gather, alluding to the clustered spikelets.) Section *Bracteosae*
Habitat: Low woods, shaded woods, meadows. "Occasional in partly shaded ground, in habitats similar to *C sparganioides*, with which it is closely related." (ws92). Shaded woods, meadows (m02). "wooded valleys, rich wooded slopes & ravines, wet river bottoms, prairies, characteristically along banks of small or large streams." (Ilpin)
distribution/range: Rare, scattered in the n. ¾ of Illinois; also in Alexander, Union, & Williamson cos, "Emerson Flower Preserve on Kishwaukee River" (ewf59). Considered adventive in Wisconsin.
Culture:
Description: cespitose; leaf sheaths not cross puckered; pistillate scales 3.5 x 2 mm; perigynia 4.5 x 2.5 mm (3.5–5 mm

"An uncommon sedge found at the edge of a woods on 20th street road near Camp Grant; perhaps only a variety of *C sparganioides* as is also, possibly, the next (*C cephaloidea* Dewey)" (ewf55).
VHFS: Ws92 consider this sedge closely related to *C gravida.* Formerly considered a shade variety of *C gravida*. (ewf59) [*Carex agglomerata* Mack, *C sparganioides* Muhl var *aggregata* (Mack) Gl]

Carex aggregata
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

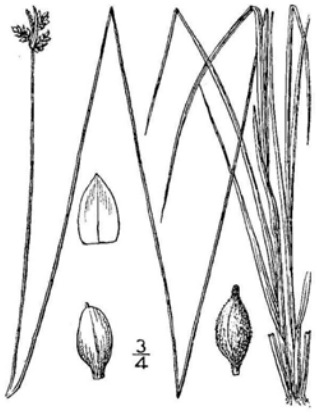
Carex alata Torrey & Gray *IL BROAD WINGED SEDGE, aka BROADWING SEDGE, WINGED SEDGE, (*alatus -a -um* winged, or wing-like, from Latin *alatus*, adjective, furnished with wings, winged, for the perigynia) Obligate wetland Subgenus *Vignae* Section *Ovales*
Habitat: Marshes & low woods. Wet ground, rarely in standing water (m05). Wet sandy or peaty swales, in full or filtered sun, near Lake Michigan, wet sandy prairie, wet peaty flats & prairies, (ws92). Wet ground (m02). In New England, marshes, low woods, peaty shores, & wet thickets (afne). distribution/range: Rare, Jackson, Massac, Pope, & Wabash cos. Coastal Plain disjunct in Indiana Dunes (Wilhelm 1990).
Culture:
Description: Plants cespitose; roots from short, black, fibrillose rootstalks; culms 1-3'; N 2n = 74. key features: Staminate flowers at the base of each spikelet, suborbicular perigynia 4-5 mm long with a broad wing (m05). "Culms cespitose; spikes silvery green or silvery brown, crowded; achene strongly overlapping in head surrounded by a several nerved perigynium. Spikes large." (Ilpin)
Comments: status: Endangered in Illinois. phenology: Blooms May 30 to June 8, mean week 13. Blooms late May to June. Blooms May (m02).



Carex alata
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Carex albicans Willdenow *ex* Sprengel (or alternately just Sprengel) WHITETINGE SEDGE, aka BLUNT SCALED OAK

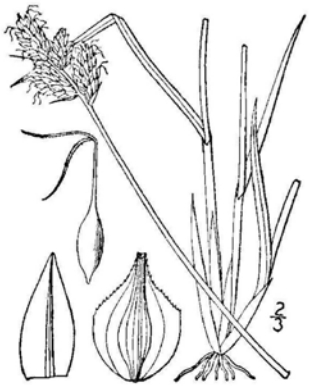
Habitat: Dry woods; dry sandy woods in the eastern dune region (ws92). Dry woods (m02). In New England, dry, usually acidic woods & clearings (afne). distribution/range: Common, throughout Illinois.
Culture:
Description: Small early flowering densely cespitose sedge of the *pensylvanica* group; spikes staminate usually sessile; pistillate scales 4.5 x 1.5 mm; perigynia conspicuous & longer than wide; "perigynia pubescent, to 3 mm long, the beak about a third of the length of the body (*not including the spongy base*)" (ws92, emphasis added), 3.5 x 1.5 mm, beak 1 mm, stipe 0.5 mm; N 2n = 36. key features:
Comments: status: phenology: Blooms April – May (m02). Seeds are ant dispersed (Yatskievych 1999). For nomenclature, see Rettig (1989, 1990). See *C emmonsii*.
VHFS: *C albicans* Willd according to m02. Synonyms for variety *albicans* are: *C artitecta* Steud, *C artitecta* Mack, *C artitecta* Mack var *subtilorostis* FJ Herman, *C nigromarginata* Schwein *muhlenbergii* (A Gray) Gleason), *C varia* Muhl, non Host.

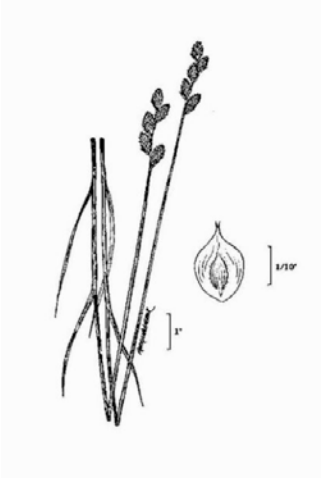


Carex albicans
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Carex albicans Willdenow *ex.* Sprengel **emmonsii** (Dewey ex Torrey) Rettig see *C emmonsii*

Carex albolutescens Schweinitz *MI BROAD-SHOULDERED SEDGE, aka GREENISH WHITE SEDGE, GREENWHITE SEDGE, LONG FRUITED OVAL SEDGE, SEDGE, (*albolutescens* becoming yellowish white, from Latin *albus,* white, dead white, pale, bright, & *luteus,* golden, saffron, orange yellow, clay yellow, & *-escens*, becoming like, having an incomplete resemblance, for the color of the mature spikelets.) Facultative wetland Subgenus *Vignae* Section *Ovales*
Habitat: Moist woods, wet ditches, marshes, rarely in standing water (m05). Moist woods (m02). Moist sandy prairie (ws92). Sandy soil, prairie, swales in upland prairies. (Ilpin) In New England, acidic swamps (afne). "A coastal plain sp that Mackenzie calls *C straminea.* Very uncommon, known definitely only from Winnebago Co" (ewf59). "An uncommon sedge which we have found in the Searle tract & in Coon Creek bottom." (ewf55) distribution/range: Very rare, Pope & Union cos in Illinois. Berrien & LaPorte cos in Michigan. Ilpin lists 27 cos in Illinois.
Culture:
Description: Plants densely cespitose; roots short black, fibrillose rootstocks; sheaths describe ligule area (Fell), heads; spikes spikelets with staminate flowers at the base, most spikes have pistillate flowers at top; staminate scales; pistillate scales 3.5 x 1 mm; perigynia 3.5 x 2 mm, with wings not quite to their tips, & the midvein of the pistillate scales reaching their tip (m05); N 2n = 66. key features: "Differs from *C festucacea* in having a flexuous rather than moniliform inflorescence & the spike bases not being prolonged, differences stressed by Dr. Zimmerman." (ewf59). The similar *C longii* has ascending perigynia that are winged all the way to their tip & pistillate scales with a vein that does not reach the tip (m05). "Culms are well overtopping the leaves; spikelets in elongate loose head; plants cespitose sans well-developed rhizomes; perigynia wing-margined & 1) obovate-suborbicular, (sic) 2) less than or equal to two times long as wide, 3) beaks ascending-appressed, 4) mature are less than 2 mm wide, mostly <4 mm long-broadest, 5) widest near summit versus *C brevior*, *C tenera*, & *C festucacea*. Obovoid perigynia body, widest part in top 1/3 & nerved inner perigynium face." (Ilpin)
Comments: status: Threatened in Michigan. phenology: Blooms May 11 to June 24, mean week 13. Or April-May (m02)






Carex albolutescens

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Seed photo Steve Hurst USDA-NRCS PLANTS Database. - Not copyrighted image. 2nd line drawing Mark Mohlenbrock, USDA-NRCS PLANTS Database / USDA NRCS *Wetland flora: Field office illustrated guide to plant spp.* USDA Natural Resources Conservation Service. Not copyrighted image. Photo Robert H. Mohlenbrock USDA-NRCS PLANTS Database Not copyrighted image

Carex albonigra Mackenzie BLACKANDWHITE SEDGE, aka BLACK & WHITE SCALED SEDGE, (*alboniger, albonigra* white black, from Latin *albus*, white, dead white, pale, bright, *-o-,& niger*, black.)
Habitat: distribution/range: British Columbia & Alberta south to Arizona at high elevations
Culture: Inferred physiological dormancy (bb02)
Description: culms phyllopodic; key features:
Comments: status: phenology: Blooms
VHFS:

CC Baskin & JM Baskin 2002 Propagation protocol for production of container *Carex albonigra* Mackenzie Plants: University of Kentucky, Lexington, Kentucky, In Native Plant Network, URL:http//www.nativeplantnetwork.org (accessed 9 July 2002). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery

Carex albonigra

1st & 2nd Photos USDA-NRCS PLANTS Database / EG Hurd, NL Shaw, J Mastrogiuseppe, LC Smithman, & S Goodrich. 1998. Not copyrighted images

Carex albursina E Sheldon BLUNT-SCALED WOOD SEDGE, aka BROAD-LEAVED SEDGE, WHITE BEAR SEDGE, WOODLAND SEDGE, (white bear, from Latin *alba* white & *ursinus* like a bear, for the abundance of the sedge near White Bear Lake, Minnesota) Subgenus *Carex* Section *Laxiflorae*

Habitat: Maple-Basswood forests & Red Oak woods, especially on windthrown mounds, slopes, & paths. Rich woods in Stephenson & Ogle cos. Wooded, often-calcareous slopes (ws92). Rich wooded ravines, wooded slopes, often calcareous (m02). In New England, moist, calcareous, deciduous woods & ravines (afne). distribution/range: Occasional throughout Illinois.

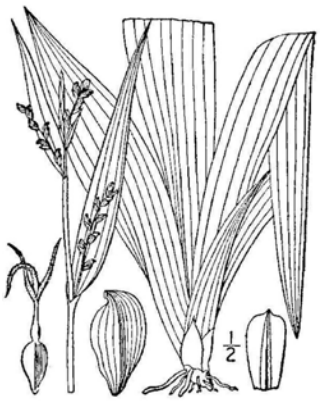
Culture: Cold moist stratify or dormant seed, light (Wade). Spp in the *C laxiflora* group are reported to have hydrophilic seeds (cu08).

Description: cespitose; pistillate scales 1.5 x 1 mm; perigynia with distinctly curved beak. 4 x 2 mm; N 2n = 44. key features: Conspicuous broad-leaved, pale green sedge, similar to *C blanda*, but with wider (1-4cm) always blue green leaf blades & floral bracts. Much larger plant than others in its spp group. "1) habitat of wooded, limy slopes; 2) broad, gray-green, lily-like, large leaves. Rootstock is large, & bulb-like. Sterile shoots culmless. Bracteal sheath edges strongly serrulate. Pistillate scales obtuse. Perigynia round-triangular, swollen, asymmetrical; abruptly contracted into strongly bent beak. Body obovoid, stipitate. Achene obovoid, triangular with concave sides, closely enveloped." (Ilpin)

Comments: Blooms April 26 to June 4, mean week 9. Blooms April-May (m02)

"Very uncommon, having been found in the co only in the maple woods on Newburg road east of Rockford. It is more common in Pecatonica River bottom in Stephenson Co & at Castle Rock in Ogle Co." (ewf55)

VHFS: [*C laxiflora* Lam var *latifolia* Boott]

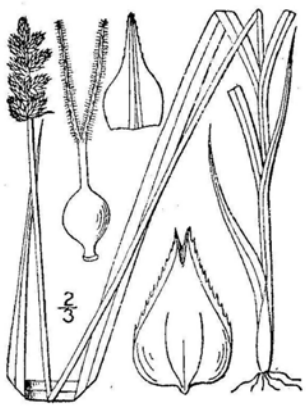


Carex albursina

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

brown inflorescence resembling a fox's tail.) FACW+ Subgenus *Vignea* Section *Vulpinae* variously placed in Sections *Bracteosae*? (*Phaestoglochin*)
Habitat: Wet meadows, deciduous floodplain forests & adjacent meadows, uncommon sedge of wet open places. Wet, calcareous meadows & swales. Uncommon, in low woods & moist fields, & roadsides (ws92). Wet meadows, moist fields, low woods (m02). In New England, calcareous meadows, swales, alluvial woods, & low thickets (afne).
distribution/range: Scattered in the n ⅔ of Illinois; also Pope Co. Much of what is in the trade originated at Pine Rock, Ogle Co, Illinois.
Culture: Cold moist stratify for 60 days or dormant seed, needs light, sow on soil surface (Wade). Cold moist stratify 360 days & it grows like dog hair (gni). 288,000 (pm) seeds per pound.
Description: Similar to *C vulpinoidea*; plants caespitose; culms clustered, stout, but soft, usually shorter than the leaves; sheaths not cross corrugated, (not wrinkled), but parts of inner sides minutely dotted with orange or brown; heads inflorescence compound, of many tiny crowded sessile spikelets, each group of which resemble a single spikelet, ovoid, 0.5-4.5 cm long, soon tinged with red or yellow; spikes staminate flowers are at top of some to all spikes; pistillate scales 2.5 x 1.5 mm; perigynia ascending, 2.8-4 (3-4) mm long, 1.3-2 mm wide, (4 x 1.5 mm) brown tan as they ripen, *"spongy-thickened & noticeably stipitate at the base"* (ws92), ovate, beak shorter than the body, green to brown, plano-convex, nerveless on the flat face; N 2n = 68. key features: "Plants of this sp have a stout aspect, soft feel, & weak culms with wing-angles & concave sides. The leaves are thin & soft, & the heads are dense, thick-cylindric to lanceolate. The perigynia have a corky base, & are brown & nerved on the convex outer face, but flat on the inner nerveless face. This sp is similar to *Carex conjuncta*, but: 1) the friable, inner band of the leaf-sheath is not cross-puckered; 2) the fertile scales are commonly brown-tinged." (Ilpin)
Comments: Blooms May 13, mean week 10. Blooms May, June; May – July (m02). Occasional specimens of *C sparganioides* & *C cephaloidea* with compound inflorescences may key to this sp. Resembles *C cephaloidea* in habit, but has wider stems, & longer beaked perigynia than *C conjuncta*.

"Uncommon in damp places; the edge of Mulford woods near the Forest Preserve. The stem is wide, winged, & soft & the sheath is not rugulose." (ewf55)



Carex alopecoidea
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Carex amphibola Steudel var **rigida** (L Bailey) Fernald AMPHIBIOUS SEDGE, aka EASTERN NARROW-LEAF SEDGE, NARROW-LEAVED SEDGE, (*amphibolus -a -um* fired at from all sides, ambiguous, doubtful, from Latin *amphibolus,* ambiguous, from Greek αμφιβολος, ἀμφίβολον, *amphibolos*, *amphibolon*, thrown or hitting on both sides, doubtful, ambiguous, from αμφι-βολια, doubt, from ἀμφί, *amphi,* on both sides, & βολ-, βαλ-, *bol-, bal-,* stem of βάλλ-ειν, *ballein,* to throw, in reference to a peculiar morphology. Compare *diabol-* & *Sporobolus*.) & Latin *rigidus,* stiff, from the stiff leaves) Subgenus *Carex* Section *Griseae*
Habitat: Ewf59 cites it from a prairie slough south of Rock Cut, Winnebago Co. Rich woods, bottomlands & meadows. (Fernald 1950) distribution/range: Cited from Cook, DuPage, & McHenry cos.
Culture:
Description: Culms to 8 dm high, leaves stiff, scabrous, 3-7 mm wide; terminal spike staminate or barely with a few perigynia. Lateral spikes 3-5, pistillate to 1-2.5 cm long, 3-6 mm thick Wilhelm & Swink (1992). Perigynia 4 x 2 mm, scale 3.5 x 1.5 mm, awn 1.5 mm, key features: Plant base red-purple. Staminate spikes sessile to short-pedunculate

spikelet elevated above the pistillate, & in having bluntly trigonous rather then terete perigynia no more than 4.7 mm long & 2 mm wide, & with tapered rather than rounded bases;
Comments: Confusingly like *C conoidea*? (sw94). Ws92 separated this variety from var *turgida* Fern. (now *C grisea*). 96,000 (pm2010) seeds per pound.

Miller et al (1999) found *Carex amphibola* Steud from Poplar Creek to be non AM mycorrhizal, with a dense covering of root hairs (without bulbous bases), & having dark septate fungal infections. Zero of two plants analyzed by Miller et al (1999) were mycorrhizal.
VHFS: Var *amphibola,* perigynia in several ranks on the rachis, appearing spirally arranged; achenes 3.0-3.7 mm long; perigynia 4.2-5.2 mm long, at least 2 ½ times as long as wide; forests, wet meadows; occasional throughout Illinois, but very rare in the northeast cos.; This is not in Illinois according to Ilpin. Not in Wisconsin. Blooms April – June (m02). In New England, moist deciduous woods 2n = ?

Var *globosa* LH Bailey, perigynia in several ranks on the rachis, appearing spirally arranged; achenes 3.0-3.7 mm long; perigynia 3.5-4.5 mm long, up to 2½ times as long as wide; Bottomland woods; confined to the sw cos of Illinois. Blooms April – June (m02). (*C corrugata* Fern.)

Var *rigida* (LH Bailey) Fern, perigynia appearing in 2 ranks, on the rachis; achenes 2.5-2.9 mm long; wet meadows, not common; apparently confined to a few sw cos; Blooms April – June (m02). [*Carex planispicata*]

Carex amphibola

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Photo Robert H. Mohlenbrock USDA-NRCS PLANTS Database Not copyrighted image. 2nd line drawing Mark Mohlenbrock, USDA-NRCS PLANTS Database / USDA NRCS *Wetland flora: Field office illustrated guide to plant spp.* USDA Natural Resources Conservation Service. Not copyrighted image.

Carex amphibola Steudel var **turgida** Fernald (Latin *turgidus -a -um*, swollen, for the inflated perigynia.) see *C grisea*

Carex amplifolia BIGLEAF SEDGE, (*amplifolius -a -um* large leaved, from Latin *amplus*, large, great, ample, spacious, -*i*- , & *folius*, from Latin *folium,* leaf.) facw+
Habitat: Moist soil. distribution/range: Western sp.
Culture: Commercially available Fourth Corner Nursery
Description: Culms to 4'; leaves impressive large broad leaves; key features:
Comments: status: phenology: Blooms ornamental.
VHFS:



Carex amplifolia

1st & 2nd Photos USDA-NRCS PLANTS Database / EG Hurd, NL Shaw, J Mastrogiuseppe, LC Smithman, & S Goodrich. 1998. Not copyrighted images. 3rd seed photo courtesy of Bend Seed Extractory, Seeds of Success, http://seedsofsuccess.smugmug.com.

Δ Carex annectens EP Bicknell (or alternately EP Bicknell (EP Bicknell) FALSE FOX SEDGE, aka LARGE YELLOW FOX SEDGE, YELLOW-HEADED FOX SEDGE, YELLOW FOX SEDGE, YELLOW-FRUITED SEDGE, YELLOWFRUIT SEDGE, (*annectens* fastening upon, binding to; annexed, incorporated, from Latin *annectens,* connecting, from *annectere*, to link or join together, the present participle of *an-(necto, nectere, nexi, nexui, nexum,* for the approximate spikes). facw Subgenus *Vignea* Section *Multiflorea.*

Habitat: Degraded low ground (ws92). In New England, sterile often sandy soils, dry or moist. Open wet ground in valleys & swampy, limy meadows. distribution/range:

Culture: Germinates well in the greenhouse with no treatment (gni greenhouse records 2006). Moist cold stratification may be necessary for some lots. 1,126,111 (gnh10), 1,450,000 (jfn04), 1,493,421 (gna08), 1,528,619 (gna04), 1,600,000 (gn), 1,766,537 (gnh12), 1,787,402 (gn11), 1,801,587 (gnh13), 1,876,033 (gnh15), 1,808,000 (aes10), 1,814,000 (lhn91), 1,821,686 (gnh10), 1,940,171 (gna05) seeds per pound.

cultivation: Full sun to partial shade.

bottom line: Small seeds should be surface sown dormant for insurance, but 40% of lots are <25% dormant. Flipflop species. Germ 50.7, 53, 8.0, sd 36.5, r7.0-97 (90)%. Dorm 39.7, 26.5, 0.0, sd 35.1, r0.0-87 (87)%. Test 31, 32, 26, r16-41 days. (12)**

Description: Staminate flowers are at top of some-all spikes; N 2n = ? key features: "The perigynia of this sp are yellow-brown, & prominently nerved on the convex (outer, lower, or dorsal) face. Versus *Carex vulpinoidea*, this sp has a narrower, less compound clustering of spikes. The culms are densely cespitose." (Ilpin)

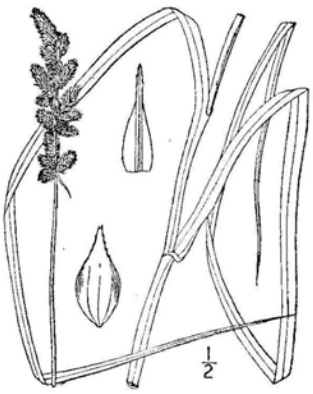
Comments: Blooms 6,7. In northern Illinois, collect seeds in July - August. Useful in landscaping, rain gardens.

Associates: Skipper host plant.

VHFS: This is the rarer variety in the Chicago area & is not clearly distinguished from the variety. M99 is somewhat confusing on this sp & the following variety, possibly due to a typo? or an omitted word. I think he is saying *C annectens* is included with *C vulpinoidea.* Gleason & Cronquist lump this sp & the following variety in with *C vulpinoidea.*

C X setacea Dewey, a hybrid with *C vulpinoidea* reported from Lake Co, Illinois. New Englanders say this is synonymous with the variety *xanthocarpa* (Bickn) Wieg & *C brachyglossa* Mack (afne).

Some authors maintain this as a variety with the following synonyms: *Carex annectens* (Bickn) Bickn var *ambigua* (Barratt ex Boott) Gleason, *C brachyglossa* Mack, *C setacea* Dewey var *ambigua* (Barratt ex Boott) Fern, *C vulpinoidea* Michx var *ambigua* Barratt ex Boott, *C xanthocarpa* Bickn var *annectens* Bickn.


Carex annectens

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Δ Carex annectens (EP Bicknell) EP Bicknell var **xanthocarpa** (EP Bicknell) Wiegand FALSE FOX SEDGE, aka GOLDEN FOX SEDGE, SMALL YELLOW FOX SEDGE, YELLOW FOX SEDGE, (*annectens* annexed, incorporated, from Latin *annectens*, connecting, from *annectere*, to link or join together, for the approximate spikes, & *xanthocarpus -a -um* with yellow fruit, from Greek ξανθος, *xanthos*, shades of yellow or yellow red, & καρπος, *karpos*, fruit, for the yellow-brown fruit.) [fac] Subgenus *Vignea* Section *Multiflorea*

Habitat: Successional, eroded old fields & disturbed, sandy prairies, low depressions in sandy savanna, disturbed hill prairie (ws92). Low prairies, pastures, & sandy places, often where it is quite dry. Around ponds & lakes, marshes, fens & lakes (m05). Fields, disturbed low ground (m02). Open wet ground in valleys, swampy, limy meadows, & calcareous spring-fed swamps. distribution/range: Scattered throughout Illinois.

Culture: Dormant seed or moist cold stratify, light. 60 days cold moist stratification (pm09). Cold moist stratify for 60 days or dormant seed, needs light, sow on soil surface (Wade). Cold moist stratify about 360 days & it grows thick as dog hair (dal). Cold moist stratify for insurance. 825,455 (gnm07), 1,440,000 (pm02), 1,445,860 (gna04), 1,533,784 (gna05), 1,638,989 (gnh02), 1,814,400 seeds per pound.

bottom line: Dormancy mechanisms are highly variable. Small seeds are best surface sown dormant, but spring seeding has success in 28% of lots. Flipflop species. Germ 32.9, 21, 21, sd 29.4, r5.0-94 (89)%. Dorm 59.9, 73, na, sd 31.3, r0.0-92 (92)%. Test 35, 35, na, r28-43 days. (#7:4)**

Description: Similar to *C vulpinoidea,* but much less common; plants caespitose; culms 2.0-3.0'; leaves shorter than the culms; sheaths note cross puckered sheath & auricle; heads inflorescence compound, of many tiny crowded sessile spikelets, each group of which resemble a single spikelet, spikes staminate flowers are at top of some-all spikes; pistillate scales red tinged; perigynia plano convex, nerveless on the flat face, with short, abrupt beaks, 1/3 as long as the body, not winged, plump, becoming bright yellow 3 x 2 mm; N. key features: This is the only *Carex* sp with an elongated spike of 10-15 spikelets that are golden brown at maturity & the beak of the perigynia less than 0.8 mm long. The leaves are shorter than the culms, separating this sp from *C vulpinoidea* (m05). Perigynia more ovate than the spp, less than 1.9 mm wide, & spikelets congested into spikes seldom exceeding 4.5 cm long (ws92). "Perigynia dark brown, obscurely nerved on the convex (outer lower, or dorsal) face." (Ilpin)

Comments: status: phenology: Blooms 5,6. In northern Illinois, collect seeds in late June. Wetland restoration cool season, successional, bunching, seed source nursery production, genetic source Lee Co.

"*C brachyglossa* Mack. Much like *C vulpinoidea*, differing from it as follows; it is uncommon, usually grows in drier places often on sand, the leaves are shorter than the stems which are erect & do not spread out. (*C annectens* Bickn. var *xanthocarpa* (Bickn.) Wieg.)" (ewf55)

Two of five plants analyzed by Miller et al (1999) were mycorrhizal, having arbuscles, vesicles, & hyphae.

VHFS: Voss calls this *C vulpinoidea* var *ambigua* Boot. Mohlenbrock 1999, 2002, & 2005 calls this *C brachyglossa* Mackenzie, as was used by ewf59. [*C brachyglossa* Mack, *C vulpinoidea ambigua*, in part, *C xanthocarpa* Bickn]


Carex annectens xanthocarpa

Δ Carex aquatilis Wahlenberg var **altior** (Rydberg) Fernald WATER SEDGE, aka AQUATIC SEDGE, COMMON WETLAND SEDGE, LONG-BRACTED TUSSOCK SEDGE, (*aquatilis -is -e* Latin *aquatilis*, aquatic, of water, swimming, living in or growing by water, floating in water, for its habitat, & *altior, altius* from Latin *altior*, taller, higher, comparative of *altus*, high, & comparative suffix; more so, to a greater degree; more-, -er, for the variety's taller than typical culms.) Obligate Wetland Subgenus *Carex* Section *Acutae*

Habitat: Wet meadows, marshes, along streams & ditches, calcareous prairies (ws92). Shallow water, wet or swampy soils; wet shores & floating alkaline peat mats; marshes, wet meadows, wet ditches, along & in streams (m05). Mid to high elevations, 2,000-4,500' medium to fine textured soils, neutral to basic, low acid tolerance, medium salinity tolerance. It has a preference for wet, calcareous soils. Marshes, wet meadows, wet ditches, along streams (m02).

distribution/range: Circumboreal sp, south to California, New Mexico, & New Jersey. Occasional in the n cos of Illinois, much rarer elsewhere in the state (m02).

Culture: Inferred physiological dormancy (bb02). Dormant seed or moist cold stratify. Seeds need light to germinate, scant soil cover. Genesis 2003 modest germ after 60 days moist cold stratification. Most lots are highly dormant, with very limited germination (gni). 485,000 (gran), 500,000 (rainier), 679,132 (gnamr08), 689,970 (gnhj14), 737,013 (gnh07), 1,013,393 (gnh09), 1,120,988 (gna05), 1,134,000 (lhn91), 1,136,000 (aes10), 1,152,250 (wns01), 1,310,245 (gnam03), 1,360,544 (Hurd & Shaw 1991), 2,000,000 (jfn04) seeds per pound. Plant 5 lbs pls per acre in fall or spring for pasture (gran). Alone seed 1-2 lb per acre fall or spring (rain).

David E Steinfeld (2001), using seed from the high Cascades, placed seed in cloth bags in cool running water for 2 days & layered bags between sphagnum moss @ 35° F for thirty days. Germination tests were run using five methods, with the following results.

1) no stratification 25%
2) 30 days cold stratification (1ºC) 25%
3) 30 days cold stratification in sphagnum moss 40%
4) 60 days cold stratification in sphagnum moss 30%
5) seed scarified for several minutes in drum sander & 30 days cold stratification 15%

Emergence was within 10 days. Green house temperatures 90 to 95°F daytime & 70°F nights, with 90-100% humidity from foggers & lights on 24 hours. Seedlings were lined out in a constructed basin, but those less than 18 inches tall drowned.

David E Steinfeld, (2001a), using valley bottom seed conducted the same experiment, using the same pretreatments, with the following results:

1) no stratification 99%
2) 30 days cold stratification (1ºC) 99%
3) 30 days cold stratification in sphagnum moss 97%
4) 60 days cold stratification in sphagnum moss 95%
5) seed scarified for several minutes in drum sander & 30 days cold stratification 80%

bottom line: Small seeds must be dormant seeded on open soil. Possible flipflop species. Germ 25.5, 26, na, sd 21.9, r0.0-64 (64)%. Dorm 61.8, 70, 85, sd 25.5, r7.0-91 (84)%. Test 26, 28, 21, r11-34 days. (#12).**

Description: An abundant sp, conspicuous or dominant in respective habitats. Tall grass-like cool season, sod forming, perennial, plants cespitose, forming small clumps. Plant often forming dense tussocks; roots with short to elongated,

1.5 mm, or 2.5-3.5 mm long, 1.5-2.6 mm wide, widest above middle & thicker at margins, pale blue green often minutely mottled with purple brown; achenes flattened; stigmas 2; N. key features: The reddish brown plant bases & last year's persistent leaves. Key differences between the similar *C emoryi, C haydenii,* & *C stricta* are the well-developed blades of the lowermost sheaths (the others aphyllopodic?) & the perigynia, which are broadest above the middle (m05). *"It differs grossly (from C stricta) in the persisting old leaves"* (ewf59) Similar to *C stricta*, but coarser & lacking pinnate fibrils bases often reddish? to reddish brown, *less likely to be in dense clumps*).

Comments: Blooms 4,5,6. In northern Illinois, collect seeds in early-June through mid-July. Wetland restoration, riparian restoration, pond banks, good erosion control, excellent palatability for livestock & wildlife, good wildlife ratings, satisfactory to good forage producer, often a significant component of meadow hay. Very good xeriscaping? (Rainier, yea, right, you betchya). Seed source nursery production drainage ditches, Green River Lowland, Hamilton & Lee Center Twp, Lee Co.

"Much like *C stricta* & in the same places: separated by the stems being phyllopodic & the old leaves persisting. (*C aquatilis* var *substricta* Kukenth)" (ewf55 as *C substricta* (Kukenth) Mack)

VHFS: M99, 02, 05 refer to Illinois material as *C aquatilis* var *substricta*, while Wetter et al (2001) uses *C aquatilis* var *aquatilis* in Wisconsin as synonymous? with the two named Illinois varieties. Yatskievych (1999) states var *altior* (Rydb) Fern is synonymous with the circumboreal var *aquatilis*. M05 notes typical *C aquatilis* has less pronounced triangular stems. And for the final straw, the type specimen of variety *altior* is actually *C emoryi*.

Var *aquatilis* in New England, calcareous marshes, bogs, meadows & shores. 2n = 72, 74-77, 79-80. And claims it is var *altior* misapplied. The synonyms for variety *aquatilis* are *Carex acutinella* Mack, *C aquatilis* Wahlenb subsp *altior* (Rydb) Hultén, *C aquatilis* Wahlenb var *altior* (Rydb) Fern, *C interimus* Maguire, *C pachystoma* T Holm, *C suksdorfii* Kük, *C variabilis* LH Bailey.

Var *substricta* Kük in New England, neutral or calcareous marshes or shores. 2n = 76, 77. [*C aquatilis* Wahlenb var *substricta* Kük, *C aquatilis*, *C substricta* (Kük) Mackenzie]

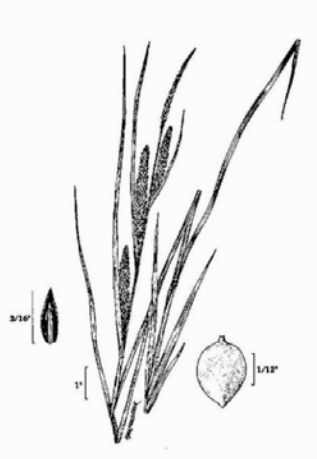
Carex aquatilus Wahlenb var *dives* SITKA SEDGE (*dives* rich, from Latin *dīves, dīvitis*, a rich man.) Variety native to western North America is available at Fourth Corner Nursery.

Occasional hybrids with *C stricta.*

CC Baskin & JM Baskin, 2002 Propagation protocol for production of container *Carex aquatilis* Wahl. plants: University of Kentucky, Lexington, Kentucky, In Native Plant Network, URL:http//www.nativeplantnetwork.org (accessed 9 July 2002). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery

D Steinfeld, 2001 Propagation protocol for production of container *Carex aquatilis* Wahl. Plants (Root Trainer 20): J Herbert Stone Nursery, Central Point, Oregon, In Native Plant Network, URL:http//www.nativeplantnetwork.org (accessed 9 July 2002). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery (high altitude seed)

D Steinfeld, 2001a Propagation protocol for production of container *Carex aquatilis* Wahl. plants (1+0 container): J Herbert Stone Nursery, Central Point, Oregon, In Native Plant Network, URL:http//www.nativeplantnetwork.org (accessed 9 July 2002). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery (lower altitude seed)





Carex aquatilis

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. 1st Photo Robert H. Mohlenbrock USDA-NRCS PLANTS 2nd line drawing Mark Mohlenbrock, USDA-NRCS PLANTS Database / USDA NRCS *Wetland flora: Field office illustrated guide to plant spp.* USDA Natural Resources Conservation Service. Not copyrighted image. Database; 2nd & 3rd Photos USDA-NRCS PLANTS Database / EG Hurd, NL Shaw, J Mastrogiuseppe, LC Smithman, & S Goodrich. 1998. Not copyrighted images. 4th seed photo courtesy of Bend Seed Extractory, Seeds of Success, http://seedsofsuccess.smugmug.com

Carex aquatilus Wahlenberg var **dives** SITKA SEDGE (*dives* rich, from Latin *dīves*, a rich man.) obl
Habitat: Common in low wet meadows, marshes, & lake shores distribution/range:
Culture: Fourth Corner Nursery
Description: key features:
Comments: status: phenology: Blooms
VHFS: [*C sitchensis*]

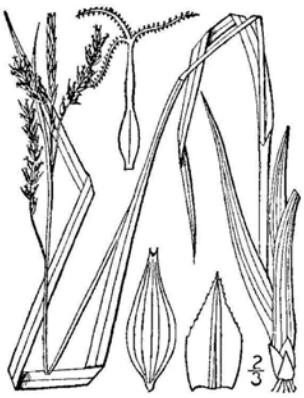
Carex arcta Boott NORTHERN CLUSTER SEDGE, aka BEAR SEDGE, SEDGE, (*arctus -a -um* Greek a bear, from ἄρκτος, *arktos*, the Great Bear, *Ursa Major*; alternately *arcta,* of the arctic.) Subgenus *Vignae* facw+, obl
Habitat: In New England, wet woods, alluvial thickets, shores, & meadows (afne). In the NW, stream banks & wet meadows. distribution/range: Central & northern Wisconsin.
Culture: Available Fourth Corner Nursery.
Description: N 2n = 60. key features:
Comments: status: Formerly? Special Concern in Michigan. phenology: Blooms
VHFS: [*Carex canescens* L var *oregana* LH Bailey, *C canescens* L var *polystachya* Boott, *C heleonastes* L f var *scabriuscula* Kük, *C kunzei* Olney]



Carex arcta

1st & 2nd Photos USDA-NRCS PLANTS Database / EG Hurd, NL Shaw, J Mastrogiuseppe, LC Smithman, & S Goodrich. 1998. Not copyrighted images. Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Culture:
Description: N 2n = 52, 54, 56. key features:
Comments: status: phenology: Blooms April 26 to May 25, mean week 10.
VHFS:



Carex arctata
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

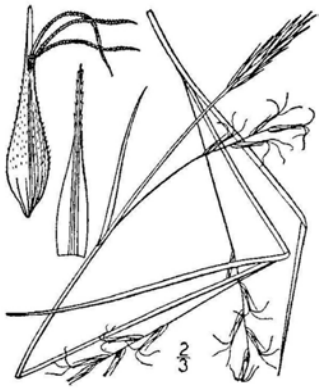
Carex argyrantha Tuckerman ex Dewey (or just Tuckerman) HAY SEDGE, aka SILVER SEDGE, (Greek *argyros*, silver & *anthos*, flower, for the silvery spikelets.)
Habitat: Open sandy successional areas (ws92). In New England, dry open woods on acidic, rocky or sandy soils (afne). distribution/range: Berrien Co, Michigan.
Culture:
Description: N 2n = 80. key features:
Comments: status: phenology: Blooms May 30- June 7
VHFS:

Carex arkansana LH Bailey ARKANSAS SEDGE,
Habitat: Moist flatwoods (m02) distribution/range: In Illinois, very rare, Saline Co.
Culture:
Description: key features:
Comments: status: phenology: Blooms May – June (m02).
VHFS:

Carex artitecta Mackenzie DRY WOODS SEDGE, see *C albicans*

Carex artitecta Mackenzie DRY WOODS SEDGE,
Habitat: Dry woodland soils over bedrock. Woodland openings & sandy alluvium of low, flat woods. distribution/range: Common in the s ½ of Illinois, also Cook, Kankakee, & Winnebago cos.
Culture:
Description: Spikes terminal staminate, lateral are pistillate; key features: "Aspect - plant of dry places, culms greater than leaves, & mostly less than 3 dm tall. Densely tufted, with short, stout rhizomes. Culms stiff, ascending. Spikes interrupted or in linear-cylindric head 1-5 cm long. Female spikes, 5-10 mm long, l less than or equal to 2 x width. Male spike sessile, less than 2 cm long. Leaves -glabrous. Perigynia - beak greater than 4.0 mm l., body ellipsoid, l greater than w, noticeably 3 angled & olive green; spongy, narrow base. This is one of earliest flowering spp of Carex in spring. Field ID: 1) nonstoloniferous dense tufts of long, slender leaves, purplish red at the base & mostly shorter than the elongated slender culms; 2) early flowering; 3) rel. hi abundance; 4) usual affiliation for dry acid wooded soils." (Ilpin)
Comments: status: phenology: Blooms 4-6
"A woodland sedge that has no long stolons but which otherwise resembles *C pennsylvanica* (sic). It blooms early." (ewf55) Fell & other authors from the 1950's consistently use the double n in the specific epithet *pennsylvanica.*
Associates:

Threatened in Michigan. Special Concern in Wisconsin.



Carex assiniboinensis
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

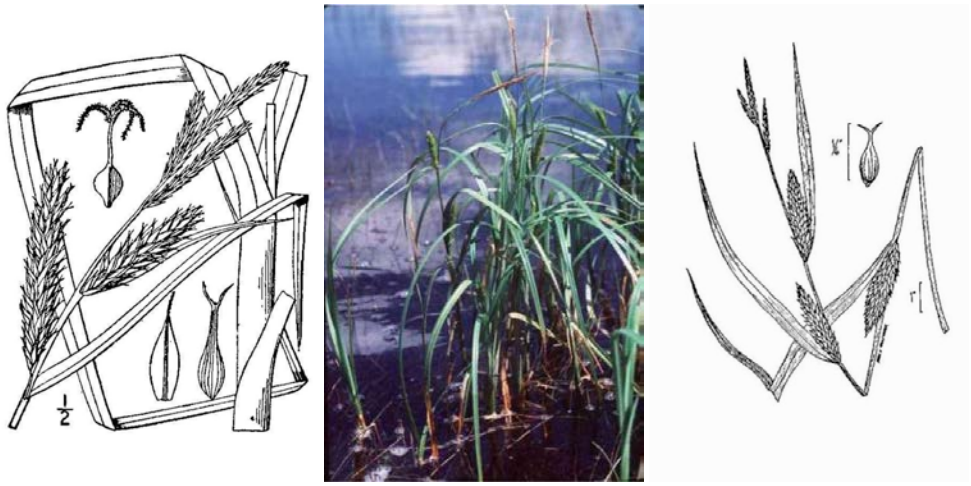
Δ Carex atherodes Sprengel *IL, IN, ME, NY, PA AWNED SEDGE, aka *CAREX ÉPI-DE-BLÉ*, HAIRY LAKE SEDGE, HAIRY-LEAVED LAKE SEDGE, LONG-BEAKED HAIRY SEDGE, SLOUGH SEDGE, WHEAT SEDGE, (Greek *ather*, an ear of wheat, & *–oides*, resemblance, likeness, for the pistillate spikelets resembling a spike of wheat.) Obligate wetland Subgenus *Carex* Section *Paludosae*
Habitat: Wet meadows. Shallow water & wet soils. In moist meadows & marshes, sometimes forms solid stands (ws92). Wet meadows, marshes, occasionally in standing water (m05). Wet meadows, marshes (m02). In New England, calcareous meadows & wet open thickets (afne). distribution/range: Occasional in the n. ¼ of Illinois, apparently absent elsewhere. Uncommon & local in the east, more common in the Midwest & west, also in Eurasia.
Culture: 60 days cold moist stratification (pm09). Clone: seed crops unreliable & unproductive; dormant seed or moist cold stratify. Small seeds need light to germinate, scant soil cover. 226,800 (lhn99), 417,000 (wns01), 2,500,000 (jfn04) seeds per pound.

bottom line: Initial seed test confirms a strong requirement for dormant seeding. Germ 2%. Dorm 94%. Test 19 days. (#1)**
Description: Robust plants cespitose, running from slender, long-creeping rhizomes (m05). Stout, coarse rhizomatous sedges, forming large monotypic stands to 10 m across; roots forming large clones, culms numerous pseudoculms 0.5-1.5 m high, usually taller than the fruiting culms, bases reddish & pinnate fibrillose, aphyllopodic; leaves M-shaped 4-10 mm wide; sheaths some sheaths & parts of blades finely pubescent, unless inundated in deeper water; heads; spikes spikelets ascending, cylindrical, 2.5 cm long, scattered on erect culms, the lower 1-4 pistillate, the upper 2-5 staminate; pistillate scales acute, 5 x 2 mm. 2.0-4.0'; perigynia somewhat inflated, 6.5 x 3 mm, teeth 1.5 mm, beak with teeth 2.5 mm perigynia teeth 2-3 mm long; stigmas 3; N 2n = ? key features: Key characteristics are the usually pubescent leaves & sheaths, the several staminate spikes, & strongly nerves perigynia with long toothed beaks, frequently growing in dense colonies (m05). "Loosely cespitose with softly villous leaves; pistillate spikes often staminate at the tip & densely flowered; achene enclosed in a many nerved, bidentate, beaked perigynium." (Ilpin)
Comments: status: Formerly a listed sp in Illinois, but in the last fifteen years found to be more common than previously thought. Endangered in Indiana, Maine, New York, & Pennsylvania. phenology: Blooms late May-early June. In northern Illinois, collect seeds in mid-June through early July. Wetland restoration, cool season, forms large colonies, aggressively rhizomatous. Genetic source isolated upland basins in Hartz's Sedge Meadow, Gold Twp, Bureau Co.

Easily distinguished by pubescence on upper portions of the sheath. One of few sedges IDable by vegetative characteristics. Seed crops may be few & far between, & of dubious viability. Self-incompatible? Puts its reproductive energy into aggressive rhizomes. The first recorded colony in Illinois was on the Ogle-Winnebago Co line north of Davis Junction.

"Found by us in the prairie slough in the southwest part of the co south of Killbuck Creek. It has a very wide northern distribution but we have seen it only in this slough, in Ogle & in Winnebago cos. The pubescent sheaths are very distinctive." (ewf55)
Associates: *C atherodes* is considered nonmycorrhizal & has bulbous-based root hairs. The unusual root hairs may represent an adaptation for nonmycorrhizal growth. (Miller et al 1999). Zero of three plants analyzed by Miller et al

VHFS: Wetter et al 2001 lists the hybrid *Carex atherodes* Spreng X *C trichocarpa* Muhl ex Willd for Wisconsin. [*C trichocarpa* Muhl var *aristata* (R Brown]



Carex atherodes

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.
1st Photo Gary Larson USDA-NRCS PLANTS Database. 2nd line drawing Mark Mohlenbrock, USDA-NRCS PLANTS Database / USDA NRCS *Wetland flora: Field office illustrated guide to plant spp.* USDA Natural Resources Conservation Service. Not copyrighted image. 2nd & 3rd Photos USDA-NRCS PLANTS Database / EG Hurd, NL Shaw, J Mastrogiuseppe, LC Smithman, & S Goodrich. 1998. Not copyrighted images

Carex athrostachya Olney SLENDER BEAKED SEDGE,
Habitat: Cordilleran sp, from low to mid montane elevations, in marshes, seeps, or swales where water stands part of the year.
Culture: 5 month outdoor cold moist stratification, with germination in June when daytime temperatures reach 22C+ (requires warmer temperatures). Four true leaves in three weeks. (Evans et al 2001)
Description:
Comments: Evans et al (2001) used seed from Montana at 1100 meters. 90,702 (Evans et al 2001) seeds per pound

J Evans, D Wick, & T Luna, 2001 Propagation protocol for production of container *Carex athrostachya* Olney. Plants (172ml conetainers): University of Kentucky, Lexington, Kentucky, In Native Plant Network, URL:http//www.nativeplantnetwork.org (accessed 9 July 2002). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery



Carex athrostachya

1st Photo Robert H Mohlenbrock USDA-NRCS PLANTS Database; 2nd & 3rd photos USDA-NRCS PLANTS Database / EG Hurd, NL Shaw, J Mastrogiuseppe, LC Smithman, & S Goodrich. 1998. Not copyrighted images

Carex atlantica LH Bailey PRICKLY BOG SEDGE, aka ATLANTIC SEDGE, STAR SEDGE, (of the Atlantic coast) Subgenus *Vignae* Section *Stellulatae*

Habitat: Swampy woods, sometimes in water in depressions. Var *atlantica* is primarily a plant of the coastal plain (m05).

distribution/range:

Culture:

Description:

Comments: status: phenology: Blooms

VHFS: Includes ssp. *atlantica*, [*Carex incomperta* Bicknell, *Carex atlantica* LH. Bailey var *incomperta* (Bicknell) F.J Hermann] ATLANTIC SEDGE, STAR SEDGE, with leaves more than 1.6 mm wide & inflorescence mostly more than 2 cm long (facultative wetland +), sphagnum peat, swampy woods; very rare, Pope Co. Illinois, LaPorte Co., Indiana. In New England, Bogs, & other sphagnous soils 2n = ? (afne). Chicago area specimens are at the low end of the measurements for this subsp & are not clearly distinct from the next.

Ssp. *capillacea* (Bailey) Reznicek [*Carex atlantica* LH. Bailey var *capillacea* LH. Bailey, *C howei* Mack, *C scirpoides capillacea*] HOWE SEDGE, STAR SEDGE, (Latin *capillus*, hair, & *-aceus,* of or pertaining to for the very slender stems & leaves.) (obligate wetland), with leaves less than 1.6 mm wide & inflorescence up to 2 cm long, & none of the perigynia more than 2 cm wide. Swamp forest, bog, birch swamp, disjunct coastal plain element (ws92). Swampy woods, very rare, Pulaski Co, Illinois, Lake & LaPorte cos. Indiana (m02, 05). In New England, bogs, wet acidic soils.

Carex atlantica

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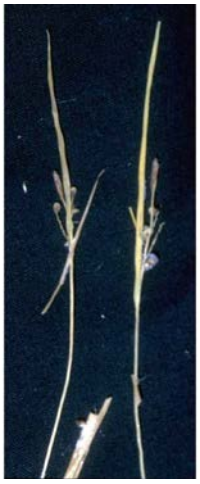
Habitat: Calcareous swales & pannes near Lake Michigan, sandy prairies & black oak savannas, low flat sandy prairies (ws92). Calcareous swales, sandy prairies (m02). In New England, meadows, springy banks, & shores, usually on basic soils (afne). distribution/range: Very rare, Cook, Kane, Lake, & Menard cos. (Washington?)
Culture: Sow at 20ºC (68ºF), if no germination in 3-4 wks, move to -4 to +4ºC (24-39ºF) for 2-4 wks, recycle (tchn). Requires cold moist stratification. Growth rate slow. Seedling vigor low. Vegetative spread rate none. Spreads slowly from seed.

cultivation: Tolerant of coarse & medium textured soils. Anaerobic tolerance high. CaCO3 tolerance low. Drought tolerance none. Fertility requirement low. Salinity tolerance none. Shade tolerance intermediate. pH 5.5-7.2.
Description: roots 8" minimum depth; spikes terminal staminate, occasionally pistillate, laterals pistillate; perigynia smooth below the middle where the cells typically become enlarged & water-filled. The bright orange color does not develop until the perigynia are fully mature & ready to be shed. The mature golden fruit are striking; N 2n = 52. key features: "Loosely cespitose; culms shorter than blades; terminal spike staminate or with a few apical perigynia, lower spikes entirely or mostly pistillate; achene enclosed in an orange, fleshy perigynium at maturity." (Ilpin)
Comments: status: Endangered in Illinois & Pennsylvania. Rare in Indiana. Threatened in New Hampshire. phenology: Blooms May 24. mean week 12. Blooms May – June (m02). Fruiting summer. C3.

"Commonly claimed for the co but unknown to us." (ewf55)
Associates: Wind pollinated. Seed is dispersed by wind. Nonmycorrhizal.
VHFS: "Populations of this sp near the lake (Lake Michigan) often have individuals which are scarcely distinct from *Carex garberi,* which see, & other individuals have elevated terminal spikelets & suggest hybridization with *Carex tetanica*." (ws92)



Carex aurea

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Carex austrina (Small) Mack SOUTHERN SEDGE, see also *C muehlenbergii austrina*

Carex austrina (Small) Mack SOUTHERN SEDGE, (*austrinus -a -um* southern)
Habitat: Dry prairies, forests, roadsides ditches, calcareous soils. distribution/range:
Culture:
Description: roots without conspicuous rhizomes; spikes staminate flowers occurring at the apex of spike; key features: "Slender, stiff, wiry culms; spikes densely aggregated; achene enclosed in a spreading perigynium." (Ilpin)
Comments: status: phenology: Blooms late spring early summer.
Associates:
VHFS: This is usually treated as a variety of *C muehlenbergii*. [*Carex muhlenbergii* Schkuhr var *australis* Olney; *C muehlenbergii* Schkuhr ex Willd var *australis* Olney ex Bailey; *C muehlenbergii* Schkuhr ex Willd var *austrina* Small]

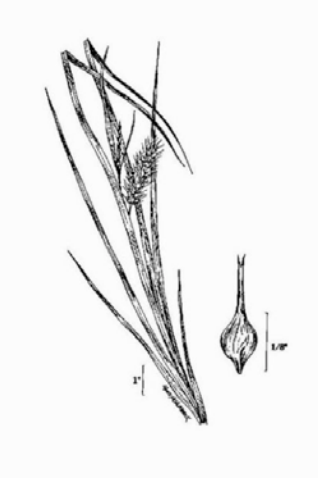
Carex austrina
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Carex backii Boott *WI BACK'S SEDGE, aka ROCKY MOUNTAIN SEDGE,
Habitat: In New England, dry, rocky or sandy woods & bluffs (afne). distribution/range: Known from Iowa, Michigan, & Wisconsin.
Culture:
Description: N 2n = 66. key features:
Comments: status: Special concern in Wisconsin. phenology: Blooms Note the "elaiosome-like" perigynia base.
VHFS:

Carex backii
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Photos USDA-NRCS PLANTS Database / EG Hurd, NL Shaw, J Mastrogiuseppe, LC Smithman, & S Goodrich. 1998. Not copyrighted images

Carex baileyi Britton BAILEY'S SEDGE, Obligate wetland Subgenus *Carex* Section *Vesicariae*
Habitat: Marshes, roadside ditches, rarely in standing water (rhm05). Marshes (m02). Swamps, woods, & wet meadows. In New England, shores, swampy woods, & meadows, usually in acidic soils (afne). Shade tolerant. No drought tolerance. No salt tolerance. pH 4.8-7.0. distribution/range: Generally ranging east of the central Midwest (m05). Very rare in Illinois, Jackson Co. (m02).
Culture:
Description: Plants densely cespitose; roots from short, stout rhizomes (m05), 8" minimum depth; N 2n = ? key features: The key differences between this plant & the similar *C lurida* are the more slender pistillate spikes, the slightly narrower leaves, & the slightly smaller perigynia that abruptly taper into beaks that are as long or longer than the bodies (m05).
Comments: status: phenology: Blooms May – August (m02). Provides food & cover for wildlife.
VHFS:





Carex baileyi

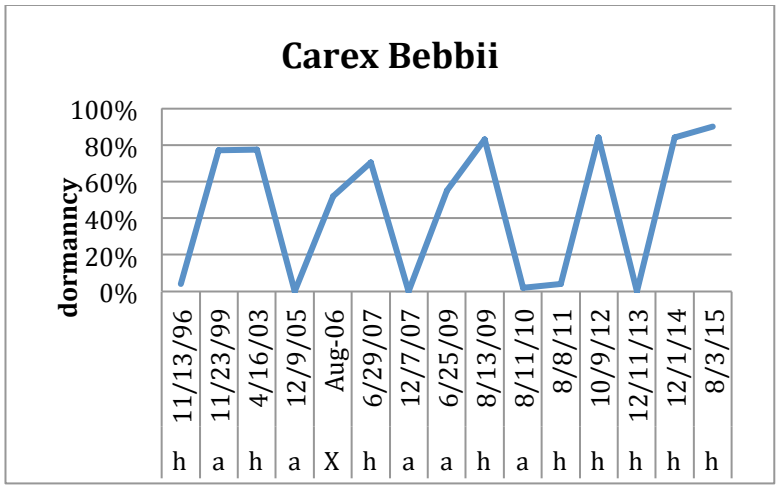
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Photo Robert H Mohlenbrock USDA-NRCS PLANTS Database; Not copyrighted images. 2nd line drawing Mark Mohlenbrock, USDA-NRCS PLANTS Database / USDA NRCS *Wetland flora: Field office illustrated guide to plant spp.* USDA Natural Resources Conservation Service. Not copyrighted image.

Δ Carex bebbii (LH Bailey) Olney ex Fernald (or *C bebbii* Olney, or Olney ex Fern.) *IN, NH, PA BEBB'S SEDGE, aka BEAUTIFUL SEDGE, BEBB SEDGE, BEBB'S OVAL SEDGE, (for Michael Shuck Bebb, early northern Illinois botanist, 1833-1895, who lived near Seward, willow expert, of *Salix bebbii* fame.) The common name OVAL SEDGE is a reference to the Ovales section of the genus. Obligate wetland Subgenus *Vignae* Section *Ovales*
Habitat: Rather common in wet places, wet road ditches, wet meadows & shores, especially in calcareous soils, alkaline. Pond shores, boggy meadows, & moist sand flats, usually calcareous. Wet meadows, clearings, & rarely in woods. Calcareous fens, alkaline bogs, low calcareous prairies, & pothole marshes. (ws92) Wet prairies, bogs, calcareous fens, & marshes (Mohlenbrock 2002, 2005). "Wet places with calcareous or neutral soils, gravelly lakeshores, stream banks, meadows, forest seeps." (fna) "Calcareous wetlands; rare." (w08) Wet meadows & saturated soils from low to mid elevations, 2,000-4,500'. In New England, shores, meadows, & forest seeps, usually in calcareous or neutral soils (afne).
distribution/range: Occasional to frequent in the n ½ of Illinois, uncommon in the s ½ .

Culture: 60 days cold moist stratification (pm09). "Fall plant or cold stratify for 2 to 4 weeks for best results. Sow seeds on soil surface at 70ºF & water." (ew12) Hulled seed germinates very well in the greenhouse with no treatment (GNI greenhouse 2006). Germination mechanisms have wide ranges from year to year. Moist stratification may improve germination, but a decent crop can be often be grown without moist stratification (gni). Dormant seed or moist cold stratify is needed with 50% of lots. Small seeds need light to germinate, light soil cover. Growth rate moderate. Seedling vigor low. Vegetative spread rate none. Spreads slowly from seed. 544,000 (pm01), 552,000 (ew12), 648,000 (lhn91), 800,000 (gn), 879,844 (gnhm03), 888,000 (gn), 944,000 (wns01), 972,000 (ecs), 1,000,000 (gn), 1,200,000, 1,400,000 (rain), 1,207,447 (gnh09), 1,402,000 (gran), 1,600,000 (jfn04), 1,760,000 (aes10), 1,849,287 (gna07), 2,045,045 (gnh13), 2,092,166 (gna10), 2,139,622 (gnh12), 2,141,495 (gnhm09), 2,203,883 (gnh14), 2,262,500 (gnh11), 2,864,353* (gnaag05) seeds per pound. When seeded alone plant 1 lb/acre in fall or spring (rain). When seeded alone for pasture (western USA), drill 2 lb pls per acre in fall or spring. Genesis recommends 0.063 to 0.50 lbs pls in mixes. Commercial seed availability is good. Plugs may sell out by late season.

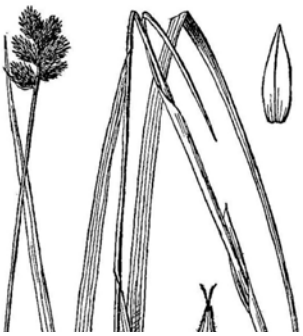
cultivation: Space plants 1.25-2.0'. Moist to medium soils, full sun to light shade. Tolerant of medium & fine textured soils. Anaerobic tolerance high. CaCO3 tolerance medium. Drought tolerance none. Fertility requirement medium. Salinity tolerance none or medium. Shade tolerant. pH 4.6-7.0.

bottom line: Small seeds are best surface sown dormant, but spring seeding has success in 50% of lots. Flipflop species. Germ 46.2, 35, 94, sd 37.9, r4.0-96 (92)%. Dorm 45.5, 55, 0.0, sd 37.1, r0.0-90 (90)%. Test 32, 33, na, r20-43 days. (#15:4)**



Description: Common plants, erect, herbaceous, perennial, native sedges, densely caespitose, densely tufted short to tall grass-like; from short compact black to brown fibrillose rootstocks, 8" minimum depth; culms slender, 1.0-3.0+', without pseudoculms, aphyllopodic; leaf blades narrow, 1-4 mm wide; heads spikelets 3-15, but usually 5, crowded at culm tip, small & rounded, all alike, short sessile, warm reddish brown at maturity, "Absence of the characteristic brown color of the spike may cause confusion" (ewf59), most spikes have pistillate flowers at tip, staminate flowers confined to taper ends of spikelet bases; pistillate scales 2.5 x 1 mm; perigynia ovate, 2 (rarely 3) times as long as wide, 2.5-3.3 mm long, 1-1.6 mm wide, < 2 mm wide, perigynia 3.5 x 2 mm, beak 1 mm, nerveless on the inner face; thin & scale-like, with translucent margins or wings, wind dispersed, mostly appressed & all or all but the beaks hidden by the scales, becoming brown at maturity; stigmas 2; N 2n = 68, 70. key features: Key characteristics are the very narrow perigynia less than 1.5 mm wide that are nerveless on the inner face & winged all the way to the base, with crowded spikes that are longer than broad (m05). "Perigynia winged; plants mostly cespitose, sans well-developed rhizomes; mature perigynia ovoid-suborbicular, & less than or equal to 2 1/2 times longer than wide. Spikelets abruptly contracted at base, perigynia at most with length 2 times width. Spikelets crowded into a head." (Ilpin)
Comments: status: Threatened in Indiana & New Hampshire. Endangered in Pennsylvania. phenology: Blooms May - June. In northern Illinois, collect seeds in mid-June through late July. Wetland restoration, riparian restoration, rain gardens, good erosion control, satisfactory to good palatability for livestock & wildlife. Good wildlife ratings, provides food & cover for wildlife. Very good xeriscaping in one source? As the seeds mature, the culms tend to severely lodge. "In addition to typical perennial behavior, *Carex bebbii* may reach reproductive stage from seed in a single season, thus behaving as a facultative annual." (fna) Seed source nursery production plots & turfy, wet ditches, Green River Lowland, Hamilton Twp, Lee Co & Blackberry Twp, Kane Co.

"Boggy places in Kent Creek bottom, an old drainage ditch east of Sugar River Forest Preserve & one west of Yale Bridge. Rather common. At times a lack of the characteristic brown color of the heads makes for confusion with the preceding (*C cristatella*). In Kent Creek bottom on North Central avenue is what appears to be a hybrid of this & *C scoparia*." (ewf55)
Associates: Larval host.
VHFS: Occasionally seems to hybridize with *C cristatella* (Fassett). Hybrids *C bebbii* (LH Bailey) Olney ex Fern X *C scoparia* Schkuhr ex Willd var *scoparia.* [*C tribuloides* Wahl var *bebbii* (Olney) Bailey]




Carex bebbii

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. 1st & 2nd Photos USDA-NRCS PLANTS Database / EG Hurd, NL Shaw, J Mastrogiuseppe, LC Smithman, & S Goodrich. 1998. Not copyrighted images

Δ Carex Bicknellii Britton * ME, NY, OH, PA BICKNELL'S SEDGE, aka BICKNELL'S OVAL SEDGE, *CAREX DE BICKNELL*, COPPER SHOULDERED OVAL SEDGE, PRAIRIE SEDGE, (*bicknellii* in honor of Eugene Pintar *Bicknell*, 1859-1925, New York business man, & amateur naturalist & ornithologist, see also *Hylocichla minima bicknelli*, BICKNELL'S THRUSH.) [upl] Subgenus *Vignae* Section *Ovales*

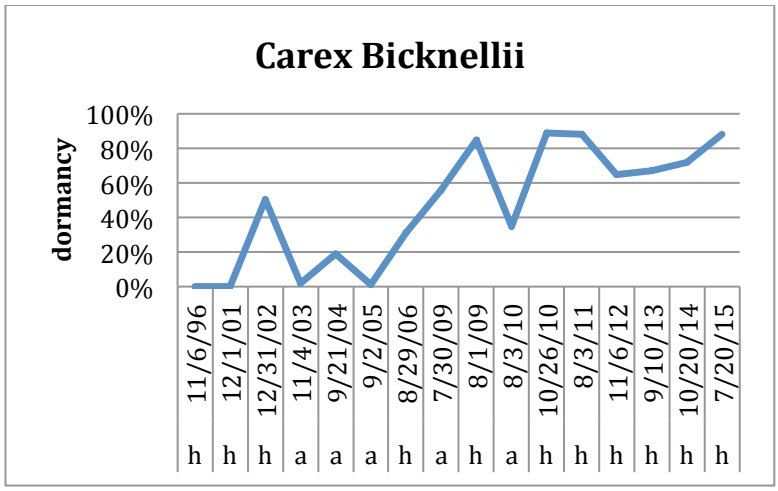
Habitat: Dry prairie plant, mesic, dry, & sand prairies; dry to wet prairies. Characteristic plant of dry prairies, frequent (ws92). Dry prairies, old fields, dry slopes (m02). "Dry to mesic prairies, open woodlands, rock or sand barrens." (fna) "Prairie-like openings & barrens over gabbro; rare." (w08) Dry wooded slopes over shallow soils. In New England, dry slopes, fields, open woods, & rock or sand barrens (afne). distribution/range: Occasional to common in the n. ¾ of Illinois, apparently absent elsewhere. "Not common in this co. In low prairie situations south of Killbuck Creek Forest Preserve & east of Winnebago & to a less extent in a shallow bog west of South Beloit." (ewf55)

Culture: "Moist cold treatment or fall sow. Light cover. Very good germination". (mfd 1993) 60 days cold moist stratification (pm09). Seeds germinate after about 60 days of cold, moist stratification. Seeds need light to break dormancy & germinate. Plant on top of growing media & do not cover. (he99) Fall plant or cold stratify for 2 to 4 weeks for best results. Sow seeds on soil surface at 70ºF & water." (ew12) Germinated well in the greenhouse with no additional treatment (Genesis greenhouse '06). Some lots are predominately non-dormant, but moist stratification improves germination in most lots, but an adequate greenhouse crop can be grown most years without treatment (gni). Dormant seed or moist cold stratify. Small seeds need light to germinate, light soil cover. Growth rate moderate. Seedling vigor low. Vegetative spread rate none. Spreads slowly from seed. 272,000 (pm01), 342,900 (gnh13), 372,589 (gna10), 374,876 (gnh11), 375,207 (gna03), 377,600 (aes10) 378,000 (lhn99), 403,200 (ew12), 407,175 (gnh12), 436,748 (gnam09), 440,563 (gna05), 461,382 (gnh06), 488,172 (gnh02), 472,917 (gnh14), 534,752 (jfn04) seeds per pound. Genesis recommends 0.063 to 0.50 lbs pls in mixes, relative to your bankroll. Commercial seed & plug availabilities are good, but demand is high. Plugs may sell out by late season.

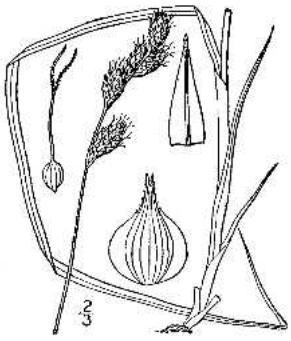
"*Carex bicknellii* Mesic prairie. Blooms late May; CREAM. Harvest July. 2', method #1. SEEDLING TRANSPLANT; by this method forms thick, long-lived clumps, but in nature is sparsely scattered; flowers 2nd year. Not a grass substitute; makes little fuel." (rs ma)

cultivation: Space plants 1.0-1.5' on center. Mesic to dry soils; full sun to light shade. Tolerant of coarse, medium, & fine textured soils. Anaerobic tolerance low. CaCO3 tolerance low. Drought tolerance medium. Fertility requirement low. Salinity tolerance none. Shade tolerant. pH 4.5-6.6. (probably a bit low, as it grows in residual limestone soils.)

bottom line: Most lots require or benefit from dormant seeding for field establishment. Ca 1/3 of lots give good results spring seeded. Flipflop species. Crossover species. Germ 41.5, 34, 9.0, sd 31.4, r1.0-88 (87)%. Dorm 46.8, 53.3, 0.0, sd 33.3, r0.0-89 (89)%. Test 32, 34, 34, r14-49 days. (#16:3)**



Description: Erect, herbaceous, perennial, native sedge, plants slender; roots 8' minimum depth; culms caespitose, 1.5-2.5'; heads spikelets all alike, short sessile, spikelets ovoid & pointed at both ends when immature, resembling young *C tenera* & *C scoparia*, somewhat spaced on the culm; spikes staminate flowers confined to tapering spikelet bases; pistillate scales 4 x1 mm; perigynia large, ovate, beaked, 4.5-7 mm long & 3-4 mm wide (5.5 x 3.5 mm) thin & scale-like, with translucent margins or wings, with 4-7 prominent parallel nerves over achene on inner face, margins orange brown & of irregular width; wind dispersed, mostly appressed & all or all but the beaks hidden by the scales, becoming brown at maturity; stigmas 2; N 2n = 76, 78. key features: Cespitose like *C brevior* & *C festucacea*, but stems fewer (ewf59). Diagnostic perigynia shapes not distinctive until about July, & then several perigynia must be observed to determine shape & proportions. "Aspect - cespitose, sans well-developed rhizomes. Spikelets less than 15 mm long, spikes ovoid to lanceolate-ovoid; few sterile leafy culms, leaves-sheaths narrow or broad, white hyaline. Perigynia & achenes-stigmas 2, achenes, perigynia winged to base; length 5.25-6 mm, width 3.25-4.25 mm beaks ascending/appressed, ventrally & dorsally nerved. Hyaline & smooth; body orbicular. The silvery brown or straw-buff, light-colored scales & perigynia mark this sp in the field." (Ilpin)
Comments: status: Possibly extirpated Maine. Threatened in New York & Ohio. phenology: Blooms mid-May - early June (m02). In northern Illinois, collect seeds in mid-June through mid-July. Collect seeds in se Wisconsin in August - September (he99). Landscaping, prairie & meadow seedings, cool season, bunching. Seed source nursery production plots original seed source Rock Island line near Wyanet & Sheffield, Wyanet Township, Bureau Co.
Associates: Nine of ten plants analyzed by Miller et al (1999) were mycorrhizal, having arbuscles, vesicles, hyphae, & intra-radical spores. Butterfly larval host. Songbirds & upland gamebirds eat seeds. Reported as deer resistant.
VHFS: [*Carex bicknellii* Britt var *bicknellii* Britt. [superfluous autonym]; *C brevior* (Dewey) Mack var *crawei* (W Boott) Boivin]



Carex bicknellii

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Carex bigelowii Torrey ex Schweinitz subsp **bigelowii** BIGELOW'S SEDGE,
Habitat: In New England, dry to moist alpine areas (afne) distribution/range:

Comments: status: phenology: Blooms
VHFS:

TV Callaghan, 1976, Growth & population dynamics of *Carex bigelowii* in an alpine environment. Oikos, 27:402-413

BÅ Carlsson, & TV Callaghan, 1990, Effects of flowering on the shoot dynamics of *Carex bigelowii* along an altitudinal gradient in Swedish Lapland. Journal of Ecology 78: 152-165

BÅ Carlsson, & TV Callaghan, 1994, Impact of climatic change factors on the clonal sedge *Carex bigelowii*: implications for population growth & vegetative spread. *Ecographica* 17: 321-330

Ola M Heide, 1992, Experimental control of flowering in *Carex bigelowii.* Oikos 65: 371-376

Carex bigelowii
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Δ Carex blanda Dewey WOODLAND SEDGE, aka BLAND SEDGE, *CAREX LISSE*, COMMON WOOD SEDGE, EASTERN WOOD SEDGE, EASTERN WOODLAND SEDGE, (*blandus -a -um* "From Latin *blandus*, mild, alluring, smooth, perhaps from the curved perigynia, a somewhat unusual feature, charmed Mr. Dewey" (ws92)). fac Subgenus *Carex* Section *Laxiflorae*
Habitat: Mesic savanna, disturbed woodlands, disturbed prairies; dry to wet deciduous woods, along paths & roadsides. Weedy sedge, open meadows, disturbed mesic prairies, ditches, shaded parks & woodlands of all sorts (Swink & Wilhelm 1994). "A common early sedge found in woods & on shady roadsides." (ewf55) "Woods & open places all over…" Woods, meadows, & mesic prairies (m02). In New England, woods, deciduous or mixed, bottomlands, & meadows (afne).
distribution/range: Common, throughout Illinois.
Culture: Best by division, any time with care. Spp in the *C laxiflora* group are reported to have hydrophilic seeds (cu08). Plant early & plant often. Dormant seed properly stored seed or moist cold stratify. Small seeds need light to germinate, light soil cover. Germination is spotty & irregular, highly dormant. Dormant as a doorknob. 2003 Genesis germination slow starting, low to modest after 60 days cold moist stratification, somewhat extended germination. Very susceptible to planting too deeply, a strong light requirement? Beware the smut. (gni) Growth rate slow. Seedling vigor low. Vegetative spread rate none. Spreads slowly from seed. 212,249 (gna04), 262,956 (gnh12), 439,109 (gnh11) seeds per pound. It is advised to cautiously use as a seed mix component at any rate. At least determine availability of local genetic material before specifying seeds.

Self sows abundantly in our backyard, & volunteers in between rows in production beds, a few volunteers in our lawn in spite of close frequent mowings, but in the green house it is hiiigghhhllly doooorrrrrmant & needs l o o o n g stratification (or it strongly hydrophilic, & therefore deeply dormant or dead when we have planted it). Best established from plugs or bear root material if you can beg, borrow, or steal either one. Possibly, salvage or liberate a few plants to establish the sp on your site. I mean it's a weed, after all; or, try to get on some growers A list.

cultivation: Tolerant of medium & fine textured soils. Anaerobic tolerance high. CaCO3 tolerance medium. Drought tolerance low. Fertility requirement medium. Salinity tolerance none. Shade tolerant. pH 4.4-7.0.

bottom line: Using plants is best. Sow fresh seed quickly after harvesting, or properly cold moist stored seed dormantly. Hand seed & rake in to establish seed soil contact. Seed rarely available from limited number of vendors. Recalcitrant & smut! Consistently strongly dormant. Sp should not be part of a general seed mix as it will be quickly outcompeted with aggressive grasses. spot seed only! Germ 5.0, 2.0, 2.0, sd 4.8, r1.0-14 (13)%. Dorm 89.8, 90, na, sd 3.7, r84-95 (11)%. Test 31, 30, na, r25-37 days. (#5)**

scales with abruptly awned midribs, appressed to the perigynia; perigynia 25-30, nerved, obovoid, bluntly triangular 3-3.5(-4.5) mm long, 1.5 mm wide, asymmetrical, with orifice or slight beak on one side of blunt apex. *Perigynia sometimes aborted by fungi* (dl); N = 15-18, 2n = 30, 32, 34, 36. key features: "If the minutely pubescent sheaths of *Carex hitchcockiana* are overlooked, it would probably key here (sw94). "Narrow leaves. Edges of bracteal sheaths strongly serrulate. Staminate spikes sessile to subsessile. Pistillate spikes separated, on slender 2-edged, minutely serrulate peduncles. Pistillate scales acute-aristate. Perigynia round-triangular, swollen, asymmetric, abruptly contracted into strongly bent beak. One of most abundant & widespread sp in Missouri & Indiana." (Ilpin)
Comments: status: phenology: Blooms April – June. Seed ripens early in the season, late May - early June. In northern Illinois, collect seeds in late May to early June, & treat as recalcitrant. Dry & clean quickly. Very common early sedge. Seed source nursery production from genetic source degraded woods in Walnut Twp, & Little Denmark, Bureau Co, & Hume Twp, southeast Whiteside Co ecotype. Self sows once established, often at some distance from the mother plant. It has self-sown into full sun, mowed turf in our backyard.

Swink & Wilhelm (1994) call this our weediest sedge. If this sedge is so damn common & weedy, why is there a continual shortage of seed, & why don't more people grow it? The sp matures & drops very early in the year, & the event is very easily overlooked. ***Very limited to non-existent availability as seed*** *or plants; when available it will sell out soon.* USDA says this is routinely available, but can anyone name 5 sources, or find one pound of seed, or state exactly when it is ripe?

This sp is the most common & abundant member of the section *Laxiflorae*, to the point of being weedy-ish in its ability to germinate & thrive in less than optimum habitats. It grows in a broadest variety of environmental & edaphic conditions of the section *Laxiflorae*. "Plants of *C blanda* from drier or wetter habitats usually produce narrower leaves &/or culms than plants from mesic or shaded habitats. Additional research is needed to determine if these are simply expressions due to environment & edaphic conditions or a complex of closely related sp or varieties." (fna)
Associates: *Carex blanda* is known to be occasionally infected with the smut fungus *Anthracoidea blanda*. (http://www.ku.edu/~eeb/faculty/alexanderh.html) Part of our 2005 crop that was not destroyed by drought was infected with smut.

Three of nine plants analyzed by Miller et al (1999) were mycorrhizal, having arbuscles, vesicles, & hyphae. Ilpin says nonmycorrhizal. A favored winter food of rabbits, to the extent rabbits will break through the poly film on cold frames & eat the plants on the benches.

ethnobotany: The pollen is possibly allergenic to humans.
VHFS: [*C laxiflora* var *blanda* (Dewey) Boott.] "Herbert (1956) reported of *C laxiflora* var *serrulata* Hermann, a more southern element, from Berrien & LaPorte cos, which reports are probably referred here" (sw94).






Carex blanda

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Seed photo Steve Hurst - USDA-NRCS PLANTS Database - Not copyrighted image. 2nd line drawing Mark Mohlenbrock, USDA-NRCS PLANTS Database / USDA NRCS *Wetland flora: Field office illustrated guide to plant spp.* USDA Natural Resources Conservation Service. Not copyrighted image. Last photo courtesy James Maximus Alwill.

Carex bolanderi. Seed photo courtesy of Bend Seed Extractory, Seeds of Success, http://seedsofsuccess.smugmug.com

Carex brachyglossa Mackenzie See *C annectens xanthocarpa* Section *Multiflorea*

Δ Carex brevior (Dewey) Mackenzie ex Lunell "SHORTER SEDGE", aka BREVIOR SEDGE, *CAREX Â TÊTES*, FESCUE SEDGE?, FIELD SEDGE, PLAINS OVAL SEDGE, SHORT BEAK SEDGE, (*brevior* shorter, more short, from Latin adjective, comparative of *brevis -is -e*, short or little, & comparative adjectival suffix *-ior*, more so, to a greater degree, for the perigynia which are shorter than some closely related spp.) [facu] Fassett has this as *C brevior* (Dewey) Mackenz. Subgenus *Vignae* Section *Ovales*.

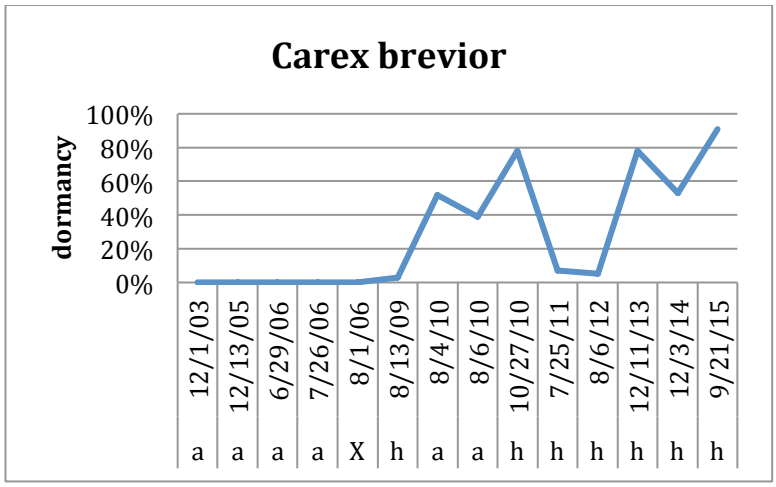
"When in doubt, its *Carex brevior*. Deal with it! Fairly common on roadsides." Phillip E Hyatt (2009) (www.sedgehead.com)

Habitat: Mesic, dry, & sand prairies. Open habitats, usually with a history of disturbance, sandy prairies, dry woods, dry ground along railroads, in ballast or sandy waste ground (ws92). "Prairies, meadows, open woods, dry road banks, often in calcareous or neutral soils." (fna) "Dry forests & margins; uncommon." (w08) Dry sand & dry prairies, dry sandy roadsides, wet river bottom prairies, & wet open valleys. "A common roadside sedge growing typically on upland prairie." (ewf55) Sandy prairies, dry woods, along railroads, often in disturbed areas (m02). In New England, dry open soil, often in calcareous or neutral soils (afne). distribution/range: Scattered to common in the n ¾ of Illinois.

Culture: 60 days cold moist stratification (pm09). Moist cold stratify. Small seeds need light to germinate, light soil cover. (Code C, D Ken Schaal). "Fall plant or cold stratify for 2 to 4 weeks for best results. Sow seeds on soil surface at 70ºF & water." (ew12) Good greenhouse crop with moist stratification. Some lots may be non-dormant. 330,301 (gnisp06), 374,279 (gna10b), 399,648 (gnh09), 411,242 (gnh12), 440,000 (jfn04), 452,800 (ew12), 464,000 (gn, pm01), 498,627 (gna10), 533,000 (gn), 654,179 (gnh13), 1,134,000 (lhn99) seeds per pound.

cultivation: Space plants 1.0-1.5' on center. Mesic to dry soils, full sun to open woodland.

bottom line: Spring seeding historically worked most years, with zero to slight dormancy; 45% of lots are



Description: Erect, herbaceous, perennial, native sedge, slender; plants caespitose; culms thin & stiff, 1.0-2.0' tall; spikelets 2-6, usually few & with rounded tops, spread out or crowded, ovoid but often with a slender tapering brown base, all alike, short sessile; spikes most have apical pistillate flowers, staminate flowers confined to tapering spikelet bases; pistillate scales 4 x 1.5 mm; perigynia ovate, beaked, green to pale brown, with perfectly circular nerveless body & evenly wide white wide wing, & 2.2 - 4.2 mm wide (5x3.5 mm, beak 1 mm) thin & scalelike, with translucent margins or wings, wind dispersed, mostly appressed & all or all but the beaks hidden by the scales, becoming brown at maturity; stigmas 2; N 2n = 48, 52, 56, 60, 64, 68. key features: "*Carex brevior* has more noticeably clavate, less often aggregated spikelets, & acuminate scales which reach well beyond the base of the beak. Typically it is nerveless or nearly so on the ventral face, but some of the material from our eastern sector approaches *C molesta* in having a few well-developed nerves. *Carex cumulata* is more rhombic as a result of the much narrowed wings below the middle & the virtually cuneate base." (ws92) "Aspect - plants cespitose, sans well-developed rhizomes; spikelets slightly overlapping. Mature perigynia: 1) winged, 2) broadly obovoid-orbicular (widest above or below middle), 3) width at 3-4 mm, length at 4-5 mm, & 4) beaks spreading. Leaf sheaths white-hyaline ventrally." (Ilpin)
Comments: status: phenology: Blooms April - June. C3. In northern Illinois, collect seeds in late June. Landscaping, bunching. Occasionally volunteers in mesic plantings, probably from seed bank, animals moving the seed around, or it may be a bit weedy. A common (?) sedge. Seed source nursery production plots, genetic source Big Rock Township, Kane Co. (BPN, ds)

" *Carex brevior* seems to display an unusually broad, aneuploid *(having or being a chromosome number that is not a multiple of the monoploid number)* chromosome series that does not readily correlated with any features of external morphology (PE Rothrock & AA Reznicek 1998). The chromosome variation may, however, have a geographic relationship. Among the plants observed, the lowest number came from northeast Texas while the highest number (n = 34) came from Manitoba (Á Löve & D Löve 1981b)." (fna) Apparently, Texas is the shallow end of the gene pool.
Associates: Four of five plants analyzed by Miller et al (1999) were mycorrhizal, having arbuscles, vesicles, & intra-radical spores.
VHFS: [*Carex festucacea* Schkuhr ex Willd var *brevior* (Dewey) Fern, *C straminea* Willd ex Schkuhr var *brevior* Dewey]

Carex brevior

1st & 2nd Photos USDA-NRCS PLANTS Database / EG Hurd, NL Shaw, J Mastrogiuseppe, LC Smithman, & S Goodrich. 1998. Not copyrighted images.

Δ Carex bromoides Shuckuhr ex (in?) Willdenow *TN BROME-LIKE SEDGE, aka BROME SEDGE, BROME HUMMOCK SEDGE, (*bromoides* resembling wild oats, from *Bromus,* from Greek βρῶμος, *bromos,* oats, & -οειδης, *-oides*, with the form of, for a supposed resemblance to a brome or wild oats.) [Obligate wetland S&W] Facultative wetland+ Subgenus *Vignae* Section *Deweyana*

Habitat: Fens & wooded swamps, flat woods, wet woods & river floodplains. Springy woods & swamps, base of a wooded bluff, morainic flatwoods, moss-covered logs, hydromesophytic swamps behind the high dunes of Lake Michigan in peaty swales (ws92). Low woods, seep springs, swamps, prairie bogs (Mohlenbrock 2002, 2005). In New England, rich, low woods & swamps. distribution/range: Scattered in northeast Illinois, also Jackson & Pope cos.

Culture: Dormant seed or moist cold stratify probably best. Small seeds need light to germinate, light soil cover. Good greenhouse crops with moist stratification. Some lots may be non-dormant. (gni) 567,000?; 1,459,807 (gnia2007) seeds per pound. Rare in the trade.

cultivation: As a shaded ground cover space 0.67' centers. Mature clumps can be divided. Plant in rich soils.

bottom line: Plant dormant or spring. Limited data shows nondormant seed. Germ 92%. Dorm 0.0%. Test 43 days. (#1)**

Description: Plants densely caespitose; roots from long, thin, blackish fibrillose rootstocks; culms 0.5-0.9'; leaves 1-2.1(-2.5) mm wide; spikelets sessile, small, all alike, longer than broad; overlapping; spikes staminate flowers or remnants are at base of some spikes; perigynia slenderly lanceolate, nearly terete, strongly nerved on convex dorsal face, green, 0.9-1.1(-1.3) mm wide, 4-5.5 mm long, *with a spongy tapered base,* closely appressed & hidden by the scales fitting tightly over the plump achenes, but with the elongate serrulate beaks empty, 1.5 mm long; stigmas 2; N 2n = 64, 66, 68. key features: Dense clumps of very narrow leaves, extremely narrow perigynia less than 1 mm wide. *C deweyiana* is similar, never aquatic, & having perigynia at least 1.5 mm wide that are nerveless on the convex face (m05). "Perigynia sans wings, lower part spongy-thickened. Perigynia 4-5 mm long, narrowly lanceoloid; appressed at maturity. Very slender, lax, green; perigynia margins serrulate; apex bidentate." (Ilpin)

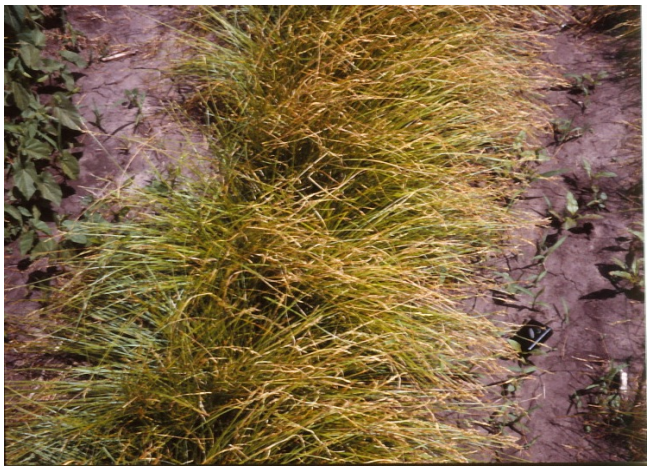
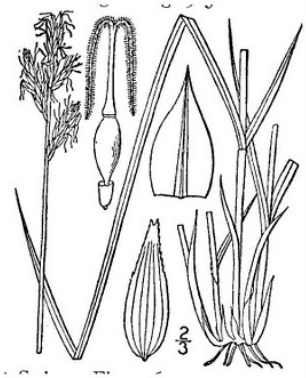
Comments: status: phenology: Blooms mid April to mid May. In northern Illinois, collect seeds in mid-June- early August. Useful in landscaping, a delicate ornamental, specimen, in rich, shaded rain gardens, bog gardens, & wetland restoration. Our plants seem to do well for several years in production fields, in rich, mesic soil & full sun, with supplemental water.

Associates: Larval host *Satyrodes eurydice* EYED BROWN BUTTERFLY.

VHFS: Wetter et al 2001 lists var *bromoides* for Wisconsin. Subsp *bromoides* for New England. This widespread subsp is known from Illinois. Culms 0.5–1(1.1) mm wide; widest leaf blades 1.3–2.9(3.1) mm wide; perigynium beak 0.3–0.42 times as long as perigynium.

Ssp *montana* Naczi [var *montana* Naczi] is endemic to the southeast portion of the Blue Ridge Physiographic Province & is known from Virginia, North Carolina, & South Carolina. It is threatened in Tennessee. 2n = 62. Culms 1–1.6 mm wide; widest leaf blades 2.8–4.4 mm wide; perigynium beak 0.36–0.48 times as long as perigynium.

FNA also illustrates var *collectanea.*

Carex bromoides, 2nd photo rich soils, full sun, a tad sun burned.
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Carex brunnescens (Persoon) Poiret in Lamarck **sphaerostachya** (Tuckerman) Kalela *IL, IN, NJ, OH BROWNISH SEDGE, aka BROWN SEDGE, *CAREX À ÉPIS GLOBULAIRES*, ROUND-SPIKE BROWNISH SEDGE, (from Latin *brunneus*, dark brown, or Germanic *brun*, & Latin *–escens*, beginning to or becoming, like, referring to the tendency of the perigynia to turn brown.) Facultative wetland. Subgenus *Vignae* Section *Heleonastes.*
Habitat: Rare but persistent element in southern alkaline bogs, hydromesophytic forest, edge of a graded panne (ws92). Alkaline bogs (m05). In New England, woods, clearings & rocky slopes (afne). distribution/range: Very rare in Illinois, Lake Co, rare in the central Midwest.
Culture:
Description: Plants cespitose; roots short blackish, fibrillose rootstocks; *perigynia broadly tapered spongy base*; N 2n = 56. key features: Key characteristics are it is the only gynecandrous (a spike with pistillate flowers above staminate flowers) sedge with 3-6 overlapping spikes & perigynia only 1 mm wide (m05).
Comments: status: Endangered in Illinois, Indiana, & New Jersey. Threatened in Ohio. phenology: Blooms May (m02). VHFS: Midwestern plants differ from typical var *brunnescens* by weaker leaves & generally smaller spikes, falling in the var *sphaerostachya* Tuckerman. Ssp *sphaerostachya* & the synonym *sphaerostachya* (Tuck) Kük.

Ssp. or var *brunnescens* in New England grows in rocky or turfy summits & has 2n = 56 (afne). The mostly northern & western ssp. *brunnescens* grades into ssp. *sphaerostachya* in the southeast US (fna). Ssp. *alaskana* & *pacifica* are also known.

[*Carex brunnescens* (Pers) Poir var *gracilior* Britt, *C brunnescens* (Pers) Poir var *sphaerostachya* (Tuck) Kük, *C buckleyi* Dewey, *C canescens* L var *sphaerostachya* Tuck, *C canescens* L var *vitilis* (Fr) J Carey, *C canescens* L var *vulgaris* LH Bailey, *C sphaerostachya* (Tuck) Dewey

Carex brunnescens

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. 2nd line drawing public domain from Hippolyte Coste - *Flore descriptive et illustrée de la France, de la Corse et des contrées limitrophes*, 1901-1906.

Carex bushii Mackenzie *CT, IN, ME, MA, NJ, OH BUSH'S SEDGE, aka LONG SCALED GREEN SEDGE, (after its discoverer, Benjamin Franklin *Bush,* 1858-1937, American botanist.) [facu] Subgenus *Carex* Section *Virescentes.*
Habitat: Usually dry woods, dry meadows, old fields (m02). Dry to mesic grasslands, forest margins; 0–500 m fna. Open grassy slopes, wet river bottom prairies, open swales, swamps, & ditches. Rarely rich woodland slopes & ravines. Dry to mesic grasslands, forest margins. distribution/range: Native south of Chicago. Common in the s. ½ of Illinois & McDonough Co, becoming less common northward; apparently adventive in Cook, DuPage, & Lake cos. Locally established in one co in Wisconsin.
Culture: Cold moist stratify. Small seeds need light to germinate, scant soil cover. Growth rate slow. Seedling vigor low. Vegetative spread rate none. Spreads slowly from seed. 128,000 (pm01), 177,778 (gn) seeds per pound.
cultivation: Tolerant of medium & fine textured soils. Anaerobic tolerance medium. CaCO3 tolerance high. Drought tolerance low. Fertility requirement medium. Salinity tolerance low. Shade tolerance intermediate. pH 5.8-7.5.
Description: roots 8" minimum depth; culms 1.0-2.0', sparsely pilose; sheaths pilose; terminal spike gynecandrous, with staminate flowers or remnants & perigynia in some spikes; male conspicuous at the base, lateral spikes (1-2) pistillate; N 2n = 64. key features: Terminal spikelet pistillate at summit, pistillate scales long tapering, exceeding the perigynia. "Blades & leaf sheaths are soft-pubescent. Pistillate spikes are ovoid to short-cylindric. The scales are prominently awned & exceed the perigynia." (Ilpin)
Comments: status: Special concern in Connecticut. Endangered in Indiana. Possibly extirpated in Maine. Endangered in Massachusetts, New Jersey, & Ohio. phenology: Blooms 5,6. Blooms May – June (m02). Fruiting late spring to early summer (fna). Coming soon to a seed room near you.
VHFS: [*Carex caroliniana* Schwein var *cuspidata* (Dewey) Shinners]

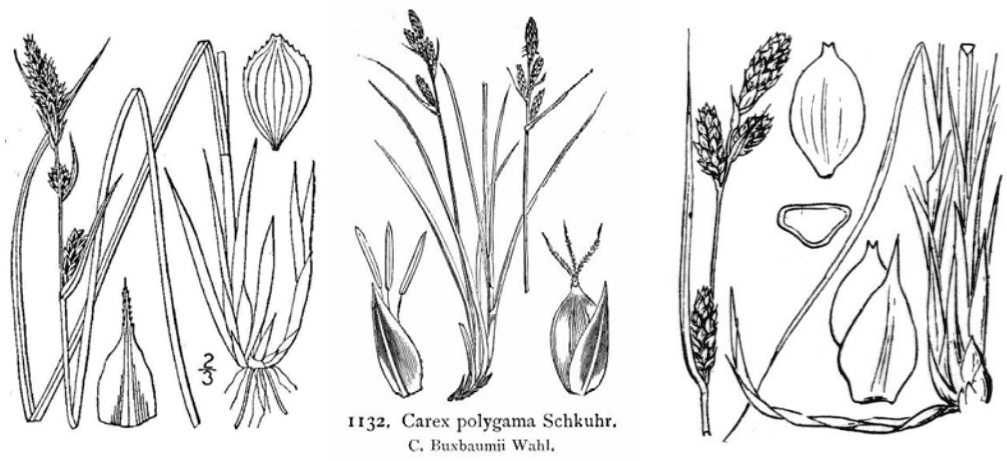
Carex bushii

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Photo Robert H. Mohlenbrock USDA-NRCS PLANTS Database -

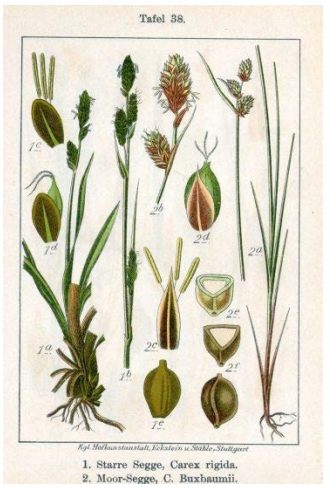
Δ Carex buxbaumii Wahlenberg * CT, KY, MD, NH, NY, PA, TN, VT, WA ANDES MINT SEDGE, aka BROWN BOG SEDGE, BROWN SEDGE, BUXBAUM'S SEDGE, *CAREX DE BUXBAUM*, *CARICE DE BUXBAUM*, DARK-SCALED FEN SEDGE, DARK SCALED SEDGE, DARK SEDGE, *MOOR SEGGE,* (*buxbaumii* New Latin for Johann Christian *Buxbaum*, 1693-1730, German botanist, member of the Russian Academy of Science, professor of botany at St. Petersburg, one of the first to write on the flora of Estonia, collected plants in the Far East; see also *Buxbaumia*, a genus of mosses (order *Buxbaumiales*)) Obligate wetland Subgenus *Carex,* formerly section *Atratae,* now *Racemosae.*
Habitat: Wet meadows, open wet meadows, floating peat mats, & wet prairies. Calcareous marshes, calcareous prairies, & calcareous swales (ws92). "A common sedge in the sloughs in Coon Creek bottom & in low places in Kent Creek." (ewf55) Damp open places. Marshes, wet prairies, swales, usually in calcareous areas (m02, 05). In New England, shores, meadows, swamps, marshes, & bogs (afne). In the SE, bogs, fens, & seepages, especially over calcareous or mafic rocks (Weakley 2007). distribution/range: Circumboreal, North America, Greenland, Eurasia. Occasional in the n ½ of Illinois; also Montgomery, Richland, Shelby, St. Clair, & Washington cos. Clay Co?
Culture: Dormant seed or moist cold stratify. Small seeds need light to germinate, scant soil cover. Preliminary data indicate seed is highly dormant (gni). Plants will spread vegetatively quite well to aggressively in favorable habitats. 324,000 (gnhe11), 336,795 (gnhe09), 337,045 (gnh09), 354,688 (gnh07), 402,482 (gnhm15), 567,000 (lhn91), 800,000 (gn) seeds per pound.

bottom line: Dormant seeding absolutely necessary for field establishment. Consistently dormant. Germ 10, 5.0, 1.0, sd 13.1, r1.0-41 (40)%. Dorm 75.7, 85, 90, sd 18.8, r39-90 (51)%. Test 32, 33, na, r23-38 days. (#9)**
Description: Occasional sedge, resembles *C stricta,* plants cespitose; roots rhizomatous, from long, horizontal rhizomes (m05, fna), stolons are noted in Ilpin; culms 1.5 - 2.5', bases reddish; leaves blue green, 1.8-3.0 mm broad; sheaths pinnate-fibrillose; heads spikelets plump, the terminal one staminate only at the base; spikes terminal pistillate toward apex, staminate below, the laterals (1-4) pistillate; slenderly acute, longer than the perigynia, 5 x 2, awn 1.5 mm; perigynia 2.4-4.33 mm long, 3 x 2 mm; achenes nearly filling the perigynia; N 2n = ca 106. key features: Dark red-purple aristate pistillate scales & minutely beaked, glaucous perigynia (m05). "Leaves are narrow, & pale-green, glaucous. Pistillate spikes are erect to ascending, sessile to short-pedunculate. The whitish perigynia are short-beaked or beakless." (Ilpin)
Comments: status: Endangered in Connecticut, New Hampshire, & Vermont. Historical in Kentucky. Threatened in Maryland & New York. Rare in Pennsylvania. Special Concern in Tennessee. Sensitive in Washington. phenology: Blooms May. In northern Illinois, collect seeds the 1st to 3rd week of June. Fruiting May - September (fna). Wetland restoration, calcareous soils. Seed source Chicago Botanic Garden, Cook Co.

Two of two plants analyzed by Miller et al (1999) were mycorrhizal, having vesicles & hyphae.
VHFS: [*Carex buxbaumii* Wahlenb f *heterostachya* Andersson, *C buxbaumii* var *anticostensis* Raymond, *C polygama* Schkuhr 1801, not JF Gmelin 1796, *C holmiana* Mack]







Carex buxbaumii

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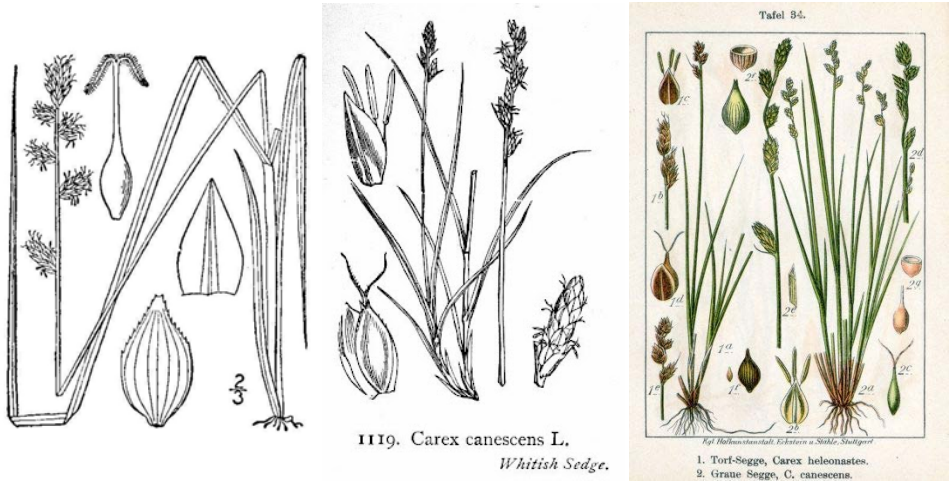
Carex canescens Linnaeus ssp **disjuncta** (Fernald) Toivonen SILVERY SEDGE, aka *CARICE CINERINA,* GRAY BOG SEDGE, *GRAUE SEGGE,* GRAY SEDGE, HOARY SEDGE, SILVER SEDGE, WHITISH SEDGE, (*canescens* becoming grayish white or whitish gray, gray (or white) & somewhat hairy, gray-pubescent, generally or rather hoary or whitish, from New Latin *canescens* gray, grayed, or hoary, from, *canescens, canescent*, from *canesco*, to become white or gray, for the grayish or silvery-brown inflorescence, with its tiny white hairs) Obligate wetland Subgenus *Vignae* Section *Heleonastes.*
Habitat: Acid bogs, associating with sphagnum under *Larix*, Red maple swamp, Birch swamp, Sphagnum bogs (m05). Tolerant of coarse & medium textured soils. Anaerobic tolerance high. CaCO3 tolerance low. Drought tolerance none. Fertility requirement low. Salinity tolerance none. Shade tolerance intermediate. pH 5.1-7.2. distribution/range: Vola

Comments: status: Endangered in Illinois. phenology: Blooms April 29 to May 22, mean week 10. C3. Low palatability for browsing & grazing animals.
Associates: *Carex canescens* is non-mycorrhizal (*which is logical because of its wet habitat*). This is cited by Muthukumar but as the typo '*C acnescens'*. Cited from Raab et al (1999) Soil amino acid utilization among spp of *Cyperaceae,* plant & soil processes. Ecology 80:2408-2419.
VHFS: *C canescens* is known to hybridize with nearly all sections in subgenus *Vignea* (Hylander 1966, Flatberg 1972, Toivonen 1981, in Hendrichs et al 2004). Ssp *canescens* in New England grows in sphagnum bogs, swamps, moist coniferous woods, meadows with synonym var *subloliacea* sensu Fernald with 2n = 56.

Ssp *disjuncta* (Fern) Toivonen in New England grows in sphagnum bogs, swamps, moist coniferous woods, meadows with 2n = 56, synonym var *disjuncta* Fernald.

"Those specimens with spikelets more than 6 mm long, & perigynia more than 2 mm long can be called var *disjuncta* Fernald; smaller specimens are referable to var *subloliacea* Laestad. Both elements are in our area & not easily distinguished. There are recent collections from Volo Bog … some of which have uncommonly narrow leaves & fewer than 10 perigynia, but the presence of papillae on both features, as well as the longer scales indicate that it is referable here rather than *C brunnescens*. (ws92)



Carex canescens

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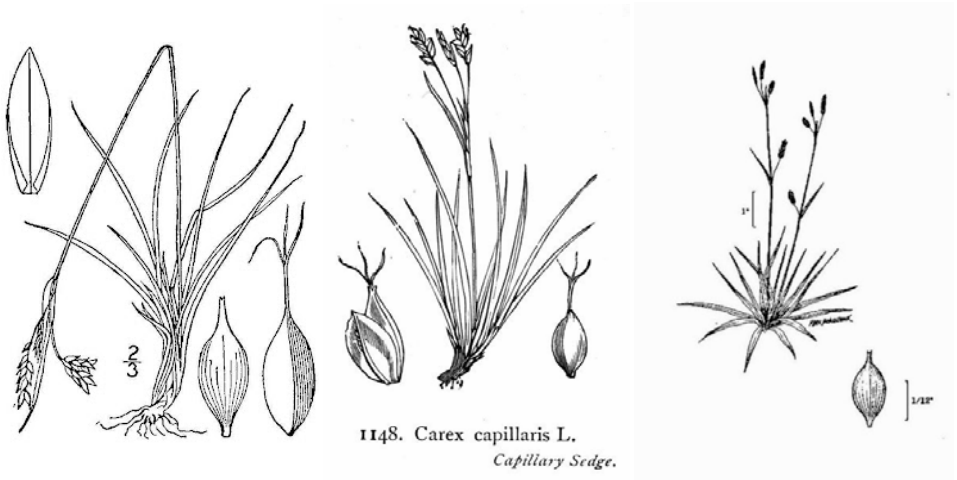
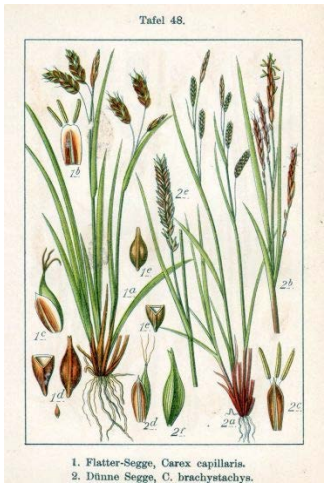
Carex capillaris Linnaeus HAIRLIKE SEDGE, aka CAPILLARY SEDGE, *FLATTER-SEGGE,* (*capillaris -is -e* fine as hair, hair-like, slender.)
Habitat: In New England, alpine regions (afne). distribution/range: Holarctic species, n Wisconsin.





Carex capillaris

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Carex X capulata (LH Bailey) Mackenzie [*C digitalis* X *C laxiculmis* var *laxiculmis*] (*capulatus -a -um* from *capulus -i* m. a coffin, a handle, esp. the hilt of a sword, & *-atus*, adjectival suffix for nouns, noting possessive of or likeness of something, as in with, shaped, made.)

Carex careyana Torrey ex Dewey *MD, MN, PA, WI CAREY'S SEDGE, (for John Carey, 1797-1880, British botanist who traveled & collected in the United States with Asa Gray) Subgenus *Carex* Section *Laxiflorae*
Habitat: Eastern Beech Sugar Maple woods & sugar maple woods (ws92). Rich woods (m02). Moist deciduous or deciduous-evergreen forests, around limestone escarpments, rocky woods, sinks or cave entrances (fna).
distribution/range: Occasional in the s. ¼ of Illinois, not common in the e. central cos., also Jo Daviess & Will cos. There is an old, unsubstantiated report for Cook Co.
Culture: Spp in the *C laxiflora* group are reported to have hydrophilic seeds (cu08).
Description: terminal spike staminate, lateral spikes 2-3, pistillate; N 2n = 68. key features: "Plants in purple-based tufts, basal leaves lanceolate, firm, evergreen, bright green. Culms mostly lateral from crowns, slender ascending; blades of higher cauline leaves, & of bracts, shorter than to longer than sheaths. Pistillate spikes with 3-8 flowers, with scales purple-white & sharp green midrib. Perigynia exceeding the scales, ascending, triangular with concave sides, broadly stipitate, finely nerved. Achene triangular, with concave sides, short-stipitate, apex short-bent, jointed with the style." (Ilpin)
Comments: status: Endangered in Maryland & Pennsylvania. Threatened in Minnesota & Wisconsin. phenology:

Carex careyana
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Carex caroliniana Schweinitz *NY CAROLINA SEDGE, (*carolinianus -a -um* **(**ca-ro-lin-ee-AH-nus) of Carolina, Carolinian, of North or South Carolina, USA.)
Habitat: Wet meadows, wet woods (m02). Prairie openings & swales. distribution/range: Occasional in the southern ½ of Illinois; also Henry & McDonough cos. Illinois is at the north edge of this sp range.
Culture:
Description: terminal spike has staminate flowers or remnants & perigynia in same spike; male conspicuous at the base, lateral spikes (usu. 2), N 2n = 48. key features: "1) Aspect; 2) spikes - female spikes less than 2 cm l., ovoid, short cylindric; 3) leaves, sheaths, bracts - blades & sheaths sparsely hairy to nearly glabrous; 4) scales, perigynia - perigynia 2.0-3.75 mm l.; 5) achenes." (Ilpin)
Comments: status: Endangered in New York. phenology: Blooms May – June (m02).
VHFS:

Carex caroliniana
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Carex cephalantha (LH Bailey) EP Bicknell (*cephalanthus -a -um* head flower from Greek κεφαλή, *kephale*, head, & ἄνθος, *anthos*, flower, for the flowers in a headlike spike.) See *C echinata*

Carex cephaloidea (Dewey) Dewey *IN, OH THINLEAF SEDGE, aka *CAREX CÉPHALOÏDE*, CLUSTERED BRACTED SEDGE, (*cephaloideus -a -um* head-like, capitate, New Latin from Greek κεφαλή, *kephale*, head, & -οειδης, *-oeides*, with the form of, for the headlike spike.) Section *Bracteosae.*
Habitat: Maple-basswood forests. Low or rich, sometimes disturbed woods (ws92). Rich woods, sometimes disturbed meadows (m02). Dry to mesic deciduous & mixed forests on neutral to basic soils (fna). In New England, rich woods, bottomlands, & forest margins, on neutral or basic soil (afne). distribution/range: Occasional in the n ¾ of Illinois, rare

Culture: Small seeds need light to germinate, scant soil cover. 652,299 (gnan), 763,667 (gnaf07) seeds per pound.

bottom line: Sow dormant or spring. Limited data suggest this seed is non-dormant. Germ 89, 89, na, r89-90 (1.0)%. Dorm 2.0, 2.0, na, r0.0-4.0 (4.0)%. Test 20, 20, na, r7-33 days. (#2)**

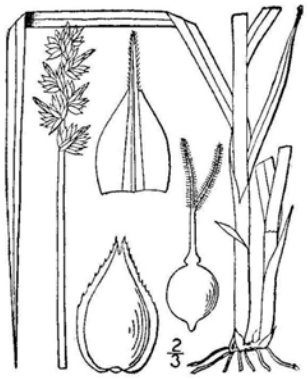
Description: Similar to *C sparganioides*, plants caespitose, loose tufted perennial from short, stout fibrillose rootstalks; roots without conspicuous rhizomes; sheaths lower sheaths cross puckered, describe ligule area (ewf59), heads spikelets aggregated into an ovoid head; spikes spikelets short, sessile; staminate flowers at apex of each spikelet, a tiny club-shaped mass of whitish scales remaining after anthesis 1.5-4 cm long; pistillate scales 3 x 2 mm; perigynia plano-convex, ovate, nerveless on flat face, 4.5 x 2 mm, beak 2 mm, green at maturity, becoming pale yellowish 3-5 mm long, delicate, glossy; stigmas 2; N 2n = 50. key features: "Differs from *C alopecoidea* in having thin stems & from *C aggregata* in having long beaked perigynia & short scales. More common than *C aggregata* & much less common than *C sparganioides* which it resembles. This & *C aggregata* are sometimes considered shade forms of *C gravida.*" (ewf59)

"Less common than *C sparganioides*, which it resembles except that the inflorescence is compact." (ewf55)

"It is very similar to *Carex aggregata* & *C sparganioides* & very difficult to separate from these two spp except by close examination of the pistillate scales, leaf sheaths, & other technical characters. Immature material is virtually impossible to determine accurately. However, the culms of *C cephaloidea* usually are more roughened than those of other closely related sedges & the pistillate scales are scarcely half as long as the body of the perigynia." (fna)

Comments: status: Threatened in Indiana. Endangered in Ohio. phenology: Blooms May – July (m02).

VHFS: [*Carex cephaloidea* Dewey, *C muricata* L var *cephaloidea* Dewey, *C sparganioides* Muhl ex Willd *cephaloidea* (Dewey) J Carey]



Carex cephaloidea

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Carex cephalophora Muhlenberg ex Willdenow CAPITATE SEDGE, aka *CAREX PORTE-TÊTE*, OVAL-HEADED SEDGE, OVAL-LEAF SEDGE, SHORT-HEADED BRACTED SEDGE, WOOD-BANK SEDGE, (*cephalophorus -a -um* (ke-FA-lo-for-us) literally head-bearing, but as typical bad etymology, forming small heads of flowers in one source, as there is nothing about forming or small in the name; from Greek κεφαλή, *kephale*, head, & φορος, *phoros*, bearing, for the spikelets borne in heads.) FACU Subgenus *Vignea*, section *Bracteosae.*

Habitat: Common in woodlands, rare in lawns, fields, & open grassy areas. Dry deciduous forests & dry open cherty, rocky, limy, or sandy woodlands. Beech maple woodlands & oak hickory woods (ws92). Woods, fields, lawns (m02). "Common in dry open woods." (wf55) In New England, dry, deciduous or mixed woods & openings (afne).

distribution/range: Common throughout Illinois.

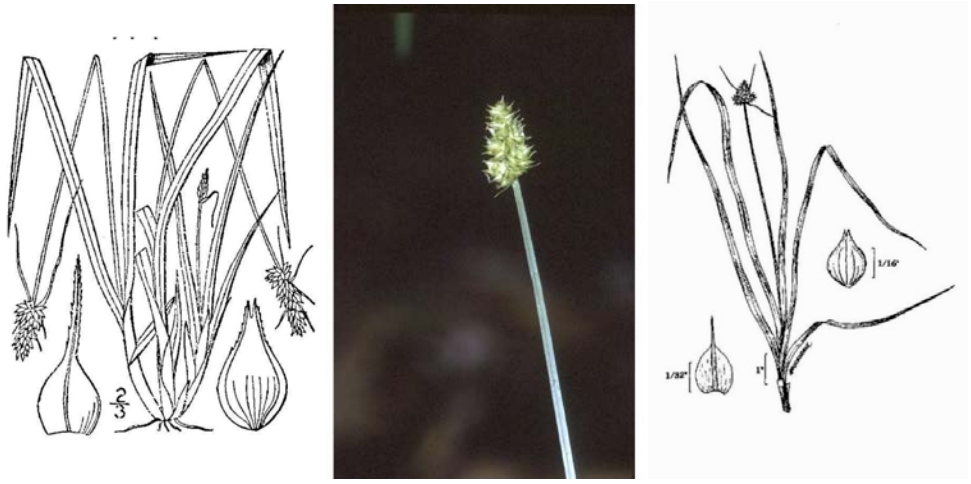
Culture: 60 days cold moist stratification (pm09). CMS (60) Cold moist stratification is not absolutely necessary but will improve significantly improve germination (gni). 378,000 (lhn91), 559,458 (gnam08) seeds per pound.

Plant on 0.8' centers.

bottom line: Field establishment best from dormant seeding; seed is significantly dormant. Germ 67%. Dorm 22%. Test 38 days. (#1)**

Description: Common sedge, plants densely caespitose, smaller than *C cephaloidea*; culms thin, often reclining, longer than leaves, 0.67-2.0'; leaves 2-4.5 mm wide, shorter than the thin stems; sheaths slightly thickened at the apex; heads 0.7-1.8 cm long, with numerous thread-like bracts; spikes spikelets short, sessile; staminate flowers at apex of each spikelet, a tiny club-shaped mass of whitish scales remaining after anthesis; pistillate scales 2 x 1 mm, perigynia 2-3 (3.5)

Comments: phenology: Blooms May 14 to June 08, mean week 12. Blooms April – July (m02). Frequent sp. Useful in landscaping, shaded ground cover. Seed source Kane-DuPage Co.
Associates: Three of eight plants analyzed by Miller et al (1999) were mycorrhizal, having hyphae. Sp is of minor food value to large mammals. Provides food & cover for small mammals & upland birds.



Carex cephalophora

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Carex cephalophora mesochorea see *C mesochorea*

Carex cherokeensis Schweinitz CHEROKEE SEDGE, aka WOLFTAIL, WOLFTAIL SEDGE, (*cherokeensis -is -e* from Cherokee, *Tsárăgĭ*.) Section *Hymenochleanae.*
Becoming available as an ornamental at a few nurseries. Alexander Co in se Illinois (bonap13).
A serious pasture weed of the se United States reducing quality grazing with its tussocks of harsh inedible foliage. (*Another victim of the plow & cow mentality!*)

Carex cherokeensis

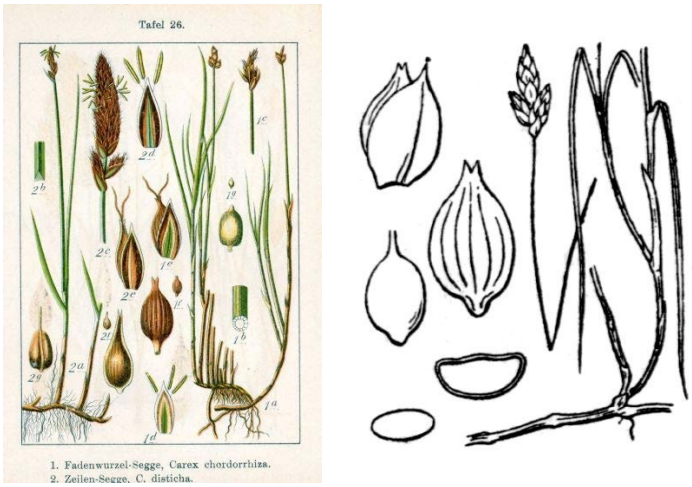
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Carex chordorrhiza Linnaeus f. (or Ehrhart ex Linnaeus, or Ehrh ex. Lf) *IL, IN, IA, MA, NY, PA, VT, WA CORDROOT SEDGE, aka *CAREX À LONG RHIZOME*, CREEPING SEDGE, *FADENWURZEL-SEGGE,* ROPE-ROOT SEDGE, STRING SEDGE, (*chordorrhizus -a -um* having stringlike or chordlike roots, from Greek χορδή, *khorde*, a string, & ῥίζα, *rhiza*, root, alluding to the older culms covered with stringy remnants of old leaves.) Subgenus *Vignea*
Habitat: Bogs. (ws92) Sphagnum swamps (m02). In New England, quagmires, bogs, & lake shores (afne). Fens, floating mats on lakeshores, emergent sedge marshes, often in shallow water. Wet calcareous meadows

at the nodes, appearing to be rhizomes; spikes staminate at apex; N 2n = 60. key features: "characterized by a unique gross morphology with long-creeping tillers & a preference of very moist to wet habitats" (Hendrichs et al 2004). "In this sp, the old culms become prostrate & bear fertile culms, terminally & in their upper nodes." (Ilpin)
Comments: status: Endangered in Illinois, Indiana, Iowa, Massachusetts, & Vermont. Threatened in New York. Extirpated in Pennsylvania. Sensitive in Washington. phenology: Blooms May 10 to May 20, mean week 11. Blooms April – June (m02).

"Though it has been credited to this co we do not know of its growing here." (ewf55 as *C chordorrhiza* Ehrh.)

TY Williams, 1990. *Carex chordorrhiza*. In: Fire Effects Information System, [Online]. US Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ [2007, March 24].



Carex chordorrhiza

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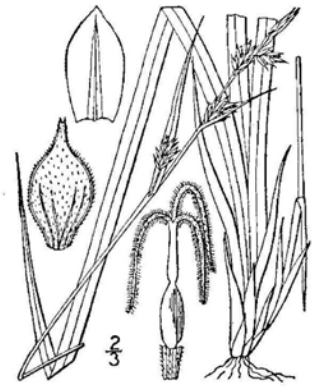
Carex communis LH Bailey *IL FIBROUSROOT SEDGE, aka *CAREX COMMUN*, COMMON BEECH SEDGE, FIBROUS-ROOTED SEDGE, (*communis -is -e* from Latin *communis*, common, universal, general; growing in a society or community, for its colonial habit.) Subgenus *Carex* Section *Montanae*
Habitat: Rich maple forests at the southeast tip of Lake Michigan, hydromesophytic forests of the Indiana Dunes. (ws92) Mesic woods, dry woods (m02). distribution/range: Scattered in Illinois, but not particularly common.
Culture: Seeds do not require over wintering to germinate. Relatively high growth rate.
Description: densely cespitose; roots rhizomes ascending(?); culms to 0.6 m high, firm, inflorescence exceeds the leaves; leaves to 5 mm wide, lower leaves pale at the ligule, midnerve impressed above & keeled beneath, scabrous margins & nerves; sheaths deeply tinged with purple; spikes pistillate & staminate flowers contained in separate spikes, staminate spikelet sessile or on peduncle shorter than pistillate spikes, pistillate spikelets usually 2-3, more or less separated in spikes to 4mm long; staminate scales purplish brown???; pistillate scales ovate, purplish, acute or cuspidate; perigynia pubescent, globose body above *stipe-like base* abruptly beaked, longer beaks to 0.5 mm; N 2n = 28. key features: "Densely cespitose; achene enclosed in a pubescent perigynium. Spikes elongate, slender; female & male flowers are clustered at the tips of their respective spikes." (Ilpin)
Comments: status: Threatened in Illinois. phenology: Blooms April 05 to May 03, mean week 7. Blooms early April to early May. Blooms May (m02).

"An early woodland sedge that is much less common than *C pennsylvanica* (sic) which it resembles." (ewf55)
Associates: Seeds are ant dispersed (Handel 1978)
VHFS: The widespread variety *communis* in New England grows in woods, on ledges, & in clearings (afne). The variety *amplisquama* (FJ Herm) J Rettig grows in Georgia, North Carolina, & South Carolina.



Carex communis
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Δ Carex comosa Boott *KY, TN, WA BRISTLY SEDGE, aka BEARDED SEDGE, BOTTLE BRUSH SEDGE, *CAREX À TOUPET*, COSMOS SEDGE, LONGHAIR SEDGE, PORCUPINE SEDGE, (*comosus -a -um* with long hair, hairy, with hairy tufts, comate, from Latin *coma,* hair & *-osus,* full of, prone to, from the hairy appearance, or in reference to some plants, leafy, or tufted, in this sp from the hairy appearance of seed head with divaricate scales & slender perigynia.) Obligate Subgenus *Carex* Section *Pseudo-cyperae*
Habitat: A semi-aquatic emergent sedge. Shorelines & ditches; wet or floating peaty shores; prefers 0-12" water. A northern sp. Marshes & wet meadows. Pond margins & shores, deep marshes, boggy places (ws92). Swamps, boggy areas, wet ditches, pond margins (m02). In New England, swamps, shores, marshes, & meadows (afne). Sinkhole ponds & oxbows. distribution/range: Frequent in the n ½ of Illinois, becoming less common southward (m02).
Culture: Cold moist stratify or dormant seed, light (Wade nd). 60 days cold moist stratification (pm09). Seeds germinate after about 60 days of cold, moist stratification. Seeds need light to break dormancy & germinate. Plant on top of growing media & do not cover. (he99) "Fall plant or cold stratify for 2 to 4 weeks for best results. Sow seeds on soil surface at 70ºF & water." (ew12) Dormant seed or moist cold stratify. Small seeds need light to germinate, scant soil cover. Growth rate slow. Seedling vigor low. Vegetative spread rate moderate. Spreads slowly from seed. This Carex, like others with large, inflated perigynia, need shallow incorporation into the soil, or very light cover, or the seed will never hydrate enough to sprout until the perigynia rots away, as it does in nature. An alternative is to remove the perigynia, which is also beneficial because the perigynia of some spp are known to contain germination inhibitors (gni). 414,991 (gnhcj15), 429,721 (gna08), 453,600 (lhn91), 453,773 (gnh02), 470,954 (gnh09), 471,199 (gna05), 480,000 (pm01&ecs), 498,901 (gnh02), 509,254 (gna04), 520,344 (gna07), 533,333 (gn00), 534,118 (gnh06), 569,000 (ew12), 658,928 (jfn04), 819,495 (gnh13), 849,438 (gnh11), 901,688 (gnam11), 2,256,000 (aes10) seeds per pound. In mixes plant up to 0.125 lb pls per acre (USDA 1997), or 0.063-0.188 lb pls (gni).

cultivation: Space plants 0.7-2.0' on center in constructed urban wetlands due to slow rate of spread in adverse conditions. Wet, saturated soils, full sun to partial shade. Can be successfully established from field sown seed, but best established from plugs. Tolerates early seasonal flooding. Nutrient load tolerance low. Not silt tolerant. Tolerant of medium & fine textured soils. Anaerobic tolerance high. CaCO3 tolerance medium. Drought tolerance low. Fertility requirement medium. Salinity tolerance low. Shade tolerance intermediate. pH 4.6-7.5

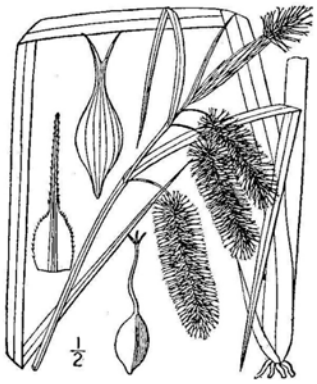
bottom line: Spring seeding works most of the time, but 1/3 of lots tested are modestly to strongly dormant. Germination does occur with dry stored seed sown in the green house with light cover, & good crops can be grown, but cold treatment can significantly improve germination of some lots. Flip flop of late. Crossover species? Germ 62.9, 70, 66, sd 26.9, r15-96 (81)%. Dorm 25, 15, 3.0. sd 26, r0.0-77 (77)%. Test 33, 37, 38, r10-46 days. (#20)**
Description: Native, robust, caespitose, perennial sedge, clump forming marsh sp; roots clumps gradually increase in diameter by short rhizomes, 8" minimum depth; culms 1.5-4.0', 1-3', bases red brown, pinnate fibrillose; leaves 7-18 mm wide, yellowish green, M shaped in cross section; terminal spike staminate, occasionally with a few perigynia, lateral spikes 3-6, pistillate; staminate spikelets 1-3 above clustered, stalked, erect, or drooping pistillate spikelets that are thick-cylindrical; pistillate scales abruptly narrowed into a long awn, 5 x 1 mm; perigynia inflated, divergent to reflexed, numerous pale green, 1.4-1.8 mm wide (7 x 1.5 mm, beak 3 mm, teeth 1.5 mm, stipe 1 mm), 13-20 (14-22) strong nerves persisting as 'bird cage' around achene when rolled between fingers; stigmas 3; N 2n = ? key features: "Culm bases &

Comments: status: Historical in Kentucky. Threatened in Tennessee. Sensitive in Washington. phenology: Blooms late May – late June. In northern Illinois, collect seeds in late July - early October. Collect seeds in se Wisconsin in August - October (he99). Resembles the smaller *C hystericina*. Wetland restoration, perennially wet rain gardens, can be short-lived on drier sites. Good shoreline stabilizer from plugs. Seed source nursery production, originally from DeKalb Co, & drainage ditches, Green River Lowland, wet ditches, Wyanet.

"Found in Kishwaukee River bottom on Newburg road on the Boone Co side of the line but we have not found it in Winnebago Co. The Chicago Natural History Museum has Bebb specimens from "Fountaindale" & "Pekatonica"." (ewf55)

Associates: Provides food & cover for wildlife. Fruits are eaten by waterfowl. Provides food for sora ,yellow rails, swamp sparrows, tree sparrows, snipe & other songbirds.

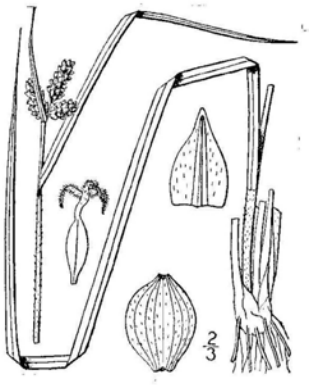
VHFS: Hybrids include *Carex comosa* Boott X *C hystericina* Muhl ex Willd & *Carex comosa* Boott X *C lurida* Wahlenb. Also rarely forms sterile hybrids with *C pseudocyperus* (fna).




Carex comosa

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Photo Robert H Mohlenbrock USDA-NRCS PLANTS Database; Not copyrighted images. 2nd line drawing Mark Mohlenbrock, USDA-NRCS PLANTS Database / USDA NRCS *Wetland flora: Field office illustrated guide to plant spp.* USDA Natural Resources Conservation Service. Not copyrighted image.

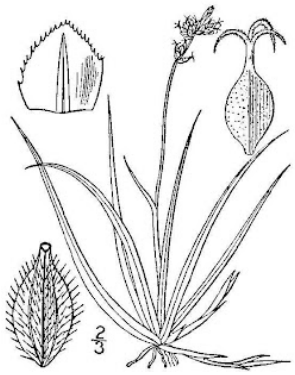
Carex complanata Torrey & Hooker COMPLAINING SEDGE, aka HIRSUTE SEDGE, (*complanatus -a -um* flattened, flat, compressed, from *complanare*, to make level, to raze) see *C hirsutella***.** *Carex complanata* is available from Chesapeake Native Nursery.



Carex complanata

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Carex complanata hirsuta see *C hirsutella*



Carex concinna
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Carex concinnoides Mackenzie NORTHWEST SEDGE, aka NORTHWESTERN SEDGE, (*concinnoides* from *concinnus*, elegant, & *–oides*, with the form of) Section *Clandestinae* (formerly *Digitatae*).
Habitat: Dry or moist woods or coniferous forests, open pine, spruce, Douglas-fir, & aspen woods. A low stoloniferous sp native to the yellow pine & Douglas fir woods of the mountains of Idaho & Washington, with 4 stigmas & 4-sided achenes (St John & Parker 1925). distribution/range: Alta, BC; Calif, Idaho, Mont, Oreg, Wash.
Culture:
Description: Leaves, lower aphyllopodic; perigynia ellipsoid to obovoid; achenes oblong ovoid, trigonous or tetragonous; stigmas 3 or 4, erect or convolute, thick, weakly papillose; N. key features: "It is most similar to *C richardsonii*; differs in its more closely aggregated, short-pedunculate pistillate spikes with very short-sheathing bracts. These close relatives (sic) are sympatric only at the northern & eastern edge of the range of *C concinnoides*." (fna)
Comments: status: phenology: Fruiting late April to late July. This is the only North American *Carex* with 4 stigmas per pistil.
VHFS:

Carex concinnoides
Photos EG Hurd, NL Shaw, J Mastrogiuseppe, LC Smithman, & S Goodrich. 1998. USDA-NRCS PLANTS Database / Not copyrighted images

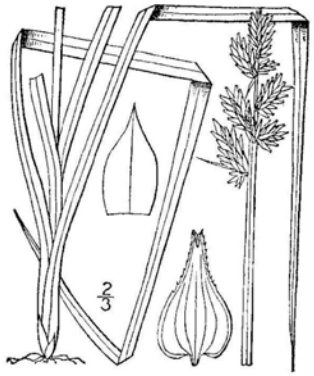
Δ Carex conjuncta Boott *MI SOFT FOX SEDGE, aka GREEN-HEADED FOX SEDGE, (*conjunctus -a -um* united, bound together, from Latin *conjunctus*, united, coupled, for the aggregated spikelets.) FACW Subgenus *Vignae* Section *Vulpinae.*
Habitat: Low wet prairies or prairie streams, damp woods. Shaded wet ground. "Very rare with us, its habitat is not well known. Apparently it was a plant of low wet prairie or prairie streams, … which are all but gone... "(ws92) Common in bogs, marshes & swales (Pepoon) Moist woods, swamps, wet prairies (m02). Wet river bottom prairies, swales, wet open valleys; low wet, alluvial or rich woods; calcareous bottoms & swales (Ilpin). distribution/range: Occasional throughout

bottom line: Initial datum indicates dormant seeding is strongly needed. Germ 11%. Dorm 81%. Test 27 days. (#1)**

Description: Looks like a diminutive *C stipata*, maturing about a month later; culms clustered, stout but soft, about equaling the leaves; sheaths cross corrugate ventrally; spikes staminate flowers are at top of some-all spikes; *perigynia the base spongy-thickened*; N. key features: "Like *Carex alopecoidea,* this sp has soft culms with wing-angled, concave sides, & its fertile scales are whitish. Unlike *C alopecoidea*, this sp has its friable, inner band of its leaf sheaths closely cross-puckered." (Ilpin)

Comments: status: Threatened in Michigan. phenology: Blooms May – June (m02). When the larger robust spikelets of *Carex stipata* are golden brown & shattering, *C conjuncta* is green as a gourd.

"Uncommon in wet places. It has a stem like the above (*C alopecoidea)* but the sheaths are rugulose." (ewf55)



Carex conjuncta, & a mixed stand of *C conjuncta* (green) & *C stipata* (brown)

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Carex conoidea Willdenow (or Boott?) (Schkuhr ex Willd, or Schkuhr) *IN, MD, MN, NC, OH OPEN-FIELD SEDGE, aka *CAREX CONOÏDE*, CONE-SHAPED SEDGE, FIELD SEDGE, KATAHDIN SEDGE, PRAIRIE GRAY SEDGE, (*conoideus -a -um* cone-like, from Greek κωνος, *konos*, a cone, & οειδηος, *–oides*, with the form of, like, resemble, for the somewhat conelike perigynia.) Subgenus *Carex* Section *Griseae.*

Habitat: Open wet meadows, fens, & low prairies. Moist, open places. Moist, usually sandy, calcareous prairie concentrated near Lake Michigan, sometimes found with *C aurea* (ws92). Wet meadows, wet prairies (m02). Moist meadows & prairies, shores of lakes, ponds, & rivers, usually in acidic sands or loams; 10–1400 m (fna). In New England, grassy meadows & shores, usually in acidic sands or gravel (afne). distribution/range: Frequent near Lake Michigan, occasional in the n. ½ of Illinois, also Massac Co. Uncommon throughout most of its range, most frequent in New England.

Culture: 466,119 (gn07) seeds per pound. This sp is rare in the trade, formerly sourced from one nursery only. Unavailable now?

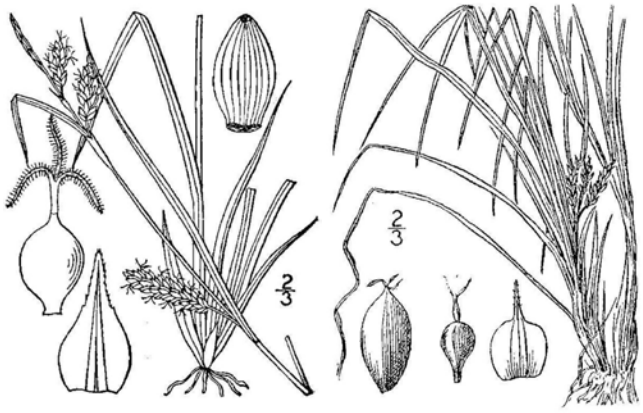
bottom line: Field establishment must be from dormant seeding. Seeds are highly dormant (≈90%). Germ 3.5,

scales resembling those of *C tetanica* (after Fasset). "The roots are fibrous or short-rhizomatous, culms are cespitose. All leaves are flat, narrow, & deep green. Perigynia are dark-green or brown, with impressed nerves, basally rounded, & loose about the achene. The achene is triangular, with concave sides, blunt angles, also is yellow-brown, granular, stipitate & apiculate. Versus *Carex crawei*, & *C meadii*, this sp has: 1) deep green, non-glaucous leaves; 2) relatively long, rough-awned pistillate scales equaling or exceeding the perigynia; 3) bunched culms." (Ilpin)
Comments: status: Endangered in Indiana & Maryland. Threatened in Minnesota (as *C katahdinensis*). Threatened in North Carolina & Ohio. phenology: Blooms April – June (m02). 5-8. Fruiting spring to summer (fna).

"Quite uncommon. In Mulford Woods near the Forest Preserve & in Keith Creek Woods." (ewf55)

This is the only sp of the section *Griseae* that is regularly found in sunny habitats.

Associates: *Carex conoidea* is often found growing with *C buxbaumii*, *C tetanica*, & *C pallescens.*
VHFS: [*C conoidea* Schkuhr?, *C katahdinensis* Fern]. The name *Carex katahdinensis* has been applied to dwarf plants of *C conoidea* found in the northern parts of its range & the latter illustration below is *C katahdinensis*. *C conoidea* has clinal variation with northern plants smaller than southern plants. Smaller plants are also known from sites with highly fluctuating water levels, which shorten the effective growing season.



Carex conoidea
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Carex convoluta Mackenzie see *C rosea* (*convolutus -a -um* rolled round, rolled up lengthwise, rolled together like a paper bag.) Section *Bracteosae.*

Carex crawei Dewey * CT, IN, KY, ME, NJ, NY CRAWE'S SEDGE, aka *CAREX DE CRAWE*, CRAWE SEDGE, DWARF FEN SEDGE, EARLY FEN SEDGE, (after its discoverer, Ithamar Bingham *Crawe,* 1792-1847, New York physician.) Subgenus *Carex* Section *Granulares.*
Habitat: Moist sandy, calcareous interdunal flats, usually near Lake Michigan, moist calcareous sand prairie, dolomitic pavement prairies of the lower Des Plaines River, moist calcareous prairies on the moraine, raised fen, marly fens, where it grows on the border of marl flats in the edge of the turf of the adjacent prairie fens (ws92). Sandy flats, calcareous prairies, fens (m02). In New England, calcareous shores, gravels, meadows, glades, & quarries (afne). distribution/range: Occasional in the n ½ of Illinois; also St Clair Co.
Culture: 60 days cold moist stratification (pm09).
Description: roots are rhizomes long creeping; 2 x 1 mm; perigynia 3 x 1.5 mm; N 2n = 38, 59, 60. key features: "Solitary to loosely cespitose; thick & stiff leaves usually curved or achene enclosed in a beaked perigynium, recurved; terminal spike staminate overtopping the pistillate spike;" (Ilpin)
Comments: status: Threatened in Connecticut & Indiana. Special concern in Kentucky. Endangered in Maine & New Jersey. Threatened in New York. phenology: Blooms April 17 to May 29, mean week 11. Blooms April – May (m02). Fruiting May to mid-August. C3.

Though geographically widespread, this sp is rare or local except near the shores of the Great Lakes, in glades in the Interior Highlands, & prairie swales in the Great Plains. Specimens from New York & Ontario have perigynia that approach *C microdonta*. (fna)
Associates: One of four plants analyzed by Miller et al (1999) were mycorrhizal, having hyphae & intra-radical spores.



Carex crawei

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Photos EG Hurd, NL Shaw, J Mastrogiuseppe, LC Smithman, & S Goodrich. 1998. USDA-NRCS PLANTS Database / Not copyrighted images

Carex crawfordii Fernald CRAWFORD'S OVAL SEDGE, aka *Carex de Crawford,* CRAWFORD'S SEDGE, (EARLY FEN SEDGE? pm2009) (for Ethan Allan *Crawford*, early settler in the White Mountains of New Hampshire.) Subgenus *Vignae* Section *Ovales*

Habitat: Degraded marsh (ws92). Degraded marsh (m02). In New England, open ground, wet or dry (afne).

distribution/range: Very rare, in Illinois, Lake Co.

Culture: 60 days cold moist stratification (pm09). 2,203,888 (agrec2007) seeds per pound.

bottom line: Dormant planting may significantly increase germination. Germination tests indicate this species ranges from 2-72% dormant seed. Germ 53.3, 47.5, na, sd 27.7, r24-90 (74)%. Dorm 39, 41, na, sd 28.2, r2.0-72 (70)%. Test 29, 29, 29, r 29 days. (#4)**

Description: Similar to *C tenera*; common plants, plants caespitose, slender; culms 1-15 dm tall, 1-5 dm tall, without pseudoculms; leaf blades 1-4 mm wide; heads spikelets all alike, short sessile; spikes staminate flowers confined to tapering spikelet bases; perigynia & scales lanceolate, 3-4.5X as long as wide, less than 2 mm, wide, about 1 mm wide, perigynia thin & scale-like, with translucent margins or wings, wind dispersed, mostly appressed & all or all but the beaks hidden by the scales, becoming brown at maturity; stigmas 2; N 2n = 52, ca. 66, 70 key features:

Comments: status: phenology: Blooms May – June (m02). Fruiting late spring to summer (fna). In reference to the Lake Co Illinois population, "heretofore, it had been recorded in the Lake Michigan region only from northern Wisconsin & Michigan, where it had been considered to be a relatively conservative sp. Taft (1992) regarded this population & those disjunct in the Appalachians as boreal relicts" (ws92). Sounds a bit like *C houghtoniana*.

VHFS: Gleason & Cronquist (1963), consider this may be a hybrid of *Carex bebbii* & *C scoparia*. [*C crawfordii* Fern var *vigens* Fern]



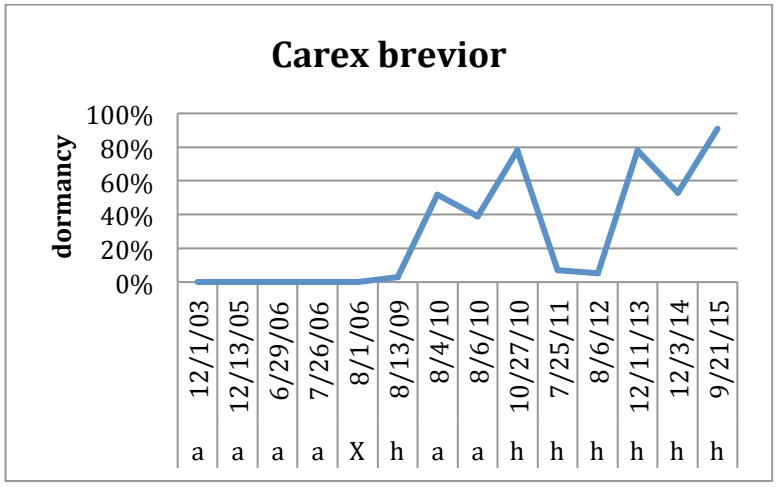
Carex crawfordii

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Photos EG Hurd, NL Shaw, J Mastrogiuseppe, LC Smithman, & S

crinitus -a -um, from *crinis, crinis*, m., hair & *–itis*, provided with, adjectival suffix, with long hair, for a hairy appearance of the awned spreading scales.) obl Subgenus *Carex* Section *Cryptocarpae*
Habitat: Wet meadows & mesic savanna. Moist to wet soils, thickets, marshes, ditches, & streambanks. Swampy woods & thickets, unshaded peaty & marshy areas, hydromesophytic swamps behind the high dunes (ws92). Swales, damp thickets, & low woods. Swampy woods, marshes (m02). Moderate shade tolerance. Low drought tolerance. No salt tolerance. distribution/range: Occasional throughout Illinois.
Culture: 60 days cold moist stratification (pm09). Cold moist stratify or dormant seed, light (Wade). Seeds germinate after about 60 days of cold, moist stratification. Seeds need light to break dormancy & germinate. Plant on top of growing media & do not cover. (he99) Dormant seed or moist cold stratify. Small seeds need light to germinate, scant soil cover. 368,000 (pm), 400,000 (gn), 435,491 (gnh02), 454,094 (gnh09), 461,382 (gnh03), 490,016 (gna07), 650,000 (ecs), 1,643,478 (gnhf12), 2,268,000 (jfn04), 2,272,000 (aes10) seeds per pound.

Relatively reasonable germination with cold moist stratification for green house crops. 2004 seed tests reveal a lot with zero percent dormancy, but 2009 crop was 95% dormant! 60% of lots have low dormancy, but 40% require dormant seeding. (gni)

bottom line: Field establishment is best by dormant seeding; greenhouse crops by cold moist stratification. 50% of lots are significantly to strongly dormant. Flipflop species, peak dorm in last 2 tests. Germ 53.5, 61.5, na, sd 32.9, r1.0-91 (90)%. Dorm 27.1, 10, 2.0, sd 32.9, r0.0-95 (95)%. Test 34, 36, 27, r27-40 days. (#13:1).**



Description: Abundant sp, conspicuous or dominant in respective habitats; roots often forming dense tussocks, but does not spread by elongate rhizomes, plants with abundant yellow root hairs, rhizomes lacking, 18" minimum depth; culms 1.0-2.5(4.0)' tall, bases often reddish & pinnate-fibrillose; leaves long & slender; sheaths smooth to rough, with minute rust-colored hairs; heads inflorescence arching, with 3-9 slender, many flowered pistillate spikelets below several slender staminate; spikes upper 1-2 spikes staminate or gynecandrous; lower 2-6 spikes pistillate or androgynous, spikelets pendant, *forma crinita* has lowest 2-6 spikes entirely pistillate; pistillate scales with long abrupt awns; perigynia 2-3 mm long, round to ovoid; *forma crinita* has perigynia 2.0-3.5 mm long, often crimped on 1 side; achenes flattened, bent; stigmas 2; N 2n = 66, 68. key features: "These plants have a stout aspect. The perigynia are short-beaked, brown-tawny-green, & anticularly-compressed (sic). The staminate spikes are long-pedunculate, arching-pendulous. The pistillate scales are rough-long-awned, with hyaline margins. The achene are wrinkled or constricted on 1 side." (Ilpin)
Comments: status: phenology: Blooms May - July. In northern Illinois, collect seeds in late July - late September. Collect seeds in se Wisconsin in August (he99). Wetland restoration. Cool season, bunching. Original seed sources 1) DuPage Co via Bob Horlock, & 2), & small fen east of Wyanet, north of the Hennepin Canal.

Bob Horlock was Seedsman for The Natural Garden in the 1980s & early 1990s, & a pioneer in this industry. We were fortunate to have a friendly business relationship with Bob during the early years of our nursery. Bob's seeds were collected in DuPage, Kane, & Will cos. We traded back & forth with him, & several of our production plots originate from his collections. Bob passed away in the early 1990s.
Associates: Butterfly larval host. Provides food & cover for songbirds, ruffed grouse chicks, & moose.
VHFS: [*Carex crinita* var *minor* Boott, *C crinita* var *morbida* J Carey, *C leonura* Wahlenb]

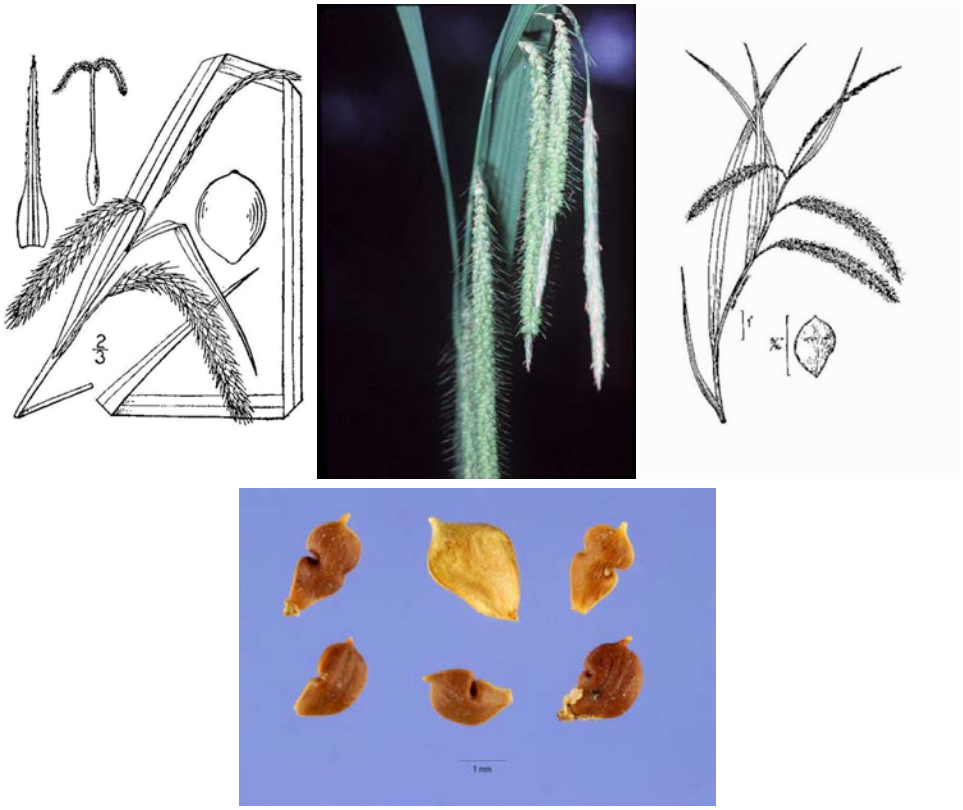
In New England, var *crinita* grows in swamps, marshes, bogs, shores, meadows, low woods, swales. 2n = 66, 68 (*C crinita* var *minor* Boott).

swampy woods & marshes, & is known from Cook, Gallatin, Lake & Pope cos. Wetter et al 2001 list var *crinita* from Wisconsin

In New England, var *brevicrinis* Fern grows in wooded swamps, shores, & low woods. N 2n = 66. key features: This variety - awns of lower pistillate scales less than or equal to 2xl of perigynia 2-3 mm thick. Upper 1-2 spikes staminate or gynecandrous; lower 2-6 spikes pistillate or androgynous." (Ilpin)

Hybrids include *Carex crinita* Lam X *C lacustris* Willd, *C crinita* Lam X *C scrabrata* Schwein, *C crinita* Lam X *C torta* Boott, & *C crinita* Lam X *C vesicaria* L.

Carex crinita var *crinita* is sympatric & often syntopic with *C gynandra* with hybrids observed. Long-awned extremes of *C crinita* var *crinita* have been called *Carex crinita* var *paleacea* (Wahlenb) Dewey, a misapplication of the epithet. Varieties *crinita* & *brevicrinis* are largely allopatric, but in parts of their range they are sympatric & syntopic. *Carex crinita* var *brevicrinis* is sympatric & syntopic over a significant portion of its range with *C mitchelliana*, with hybrids reported.



Carex crinita

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. 1st Photo Robert H Mohlenbrock, Seed photo by Steven Hurst, USDA-NRCS PLANTS Database; Not copyrighted images. Line drawing Mark Mohlenbrock, USDA-NRCS PLANTS Database / USDA NRCS *Wetland flora: Field office illustrated guide to plant spp.* USDA Natural Resources Conservation Service. Not copyrighted image.

Carex cristata (*cristatus -a -um* crista'tus (kris-TAH-tus) crested, comb-like, from Latin adjective *cristatus -a -um,* tufted, crested; having a comb or tuft on head; plumed) see *C cristatella*

Δ Carex cristatella Britton CRESTED SEDGE, aka *CAREX ACCRÊTÉ,* CRESTED OVAL SEDGE, ROSETTE SEDGE, ROUND-SPIKELET SEDGE, (*cristatellus -a -um* New Latin a small crest, by usage small tuft or a small comb, from Latin *cristatus -a -um*, tufted, crested, & *–ellus -a -um*, diminutive suffix, for the widely spreading perigynia, which appear as tiny crests to some.) Faculative wet+ Subgenus *Vignae* Section *Ovales*

Habitat: Seasonally inundated-wet meadows. Low, open ground, even in fairly disturbed wetlands, moist degraded meadows, degraded bogs (ws92). Agricultural drainage ditches, open swamps, shores; wet places in or near deciduous forests; prefers moist soil, may tolerate up to 6 inches of standing water. "A very common sedge, being found in nearly all wet places." (ewf55) In New England, meadows, damp woods, marshes, & streambanks (afne). Forms dense patches in open places. Wet woods, marshes, swales, streambanks, ditches, meadows, & bogs (m02). distribution/range: Throughout Illinois, but more frequent in northern & west central cos. Introduced in Europe

fresh seed. 928,000 (pm01), 936,000 (ew12), 944,000 (jfn04, aes10), 1,476,423 (gna08), 1,584,642, (gna03), 1,600,000 (gn00), 1,816,000 (hulled gnh02), 1,886,313 (gna06), 2,268,000 (lhn91), 2,338,144 (gnh13), 2,647,230* (gna07) seeds per pound. In mixes plant up to 0.125 lb pls per acre (us97).

cultivation: Space plants 1.0-1.5' on centers. Wet to mesic soils, full sun to shade. Nutrient load tolerance moderate. Siltation tolerance low. Tolerant of medium & fine textured soils. Anaerobic tolerance high. CaCO3 tolerance low. Drought tolerance low. Fertility requirement medium. Salinity tolerance none. Shade tolerant. pH 4.9-6.8.

bottom line: Spring field sowing works well 8 out of 10 years, but 74-80% dorm will get you if you don't look out. Flipflop species. Easy from dry stored seed in greenhouse with no moist stratification, but occasional lots significantly benefit from cold moist stratification. Dormant seed or moist cold stratify will provide increased or more uniform germination. Small seeds need light to germinate, scant soil cover. Flipflop species, peak dorm in last 2 tests. Germ 63, 71.5, 73, sd 26.4, r15-97 (82)%. Dorm 21.4, 12.5, 0.0, sd 28.1, r0.0-80 (80)%. Test 35, 36, 27, r27-44 days. (#13).**

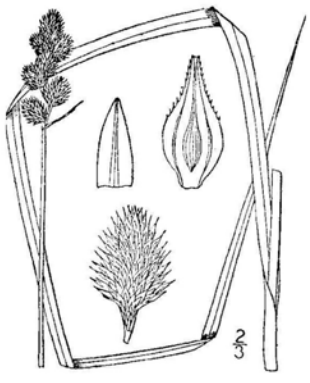
Description: Common, native sedge, caespitose, slender, stout, tufted; roots 8" minimum depth; culms 1-15 dm tall, 1.5-2.5', somewhat larger plants with slender pseudoculms, aphyllopodic; leaves 2-10 mm wide, spikes most with pistillate flowers at the apex, spikelets 6-15 per culm, globose, hard, prickly, all alike, short sessile, becoming pinkish brown, staminate flowers confined to tapering spikelet bases, in forma *cristatella,* all the spikelets are contiguous; perigynia less than 2 mm wide, 3-4 mm long, (3.5 x 1.5 mm, beak 1 mm) rhombic, twice (rarely 3X) as long as wide, broadest above the achene tip, slenderly lanceolate, thin & scale-like, with translucent crinkly margins or wings, divergent to slightly reflexed wind dispersed, mostly appressed & all or all but the beaks hidden by the scales, becoming brown at maturity; achenes; stigmas 2; N 2n = 70. key features: Diagnostic perigynia shapes not distinctive until about July, & then several perigynia must be observed to determine shape & proportions. "Perigynia wing-margined, lower part firm, without spongy thickening; plants mostly cespitose, sans well-developed rhizomes. Mature perigynia ovoid to suborbicular, less than or equal to 2.5 times longer than wide; spikes globose, mature perigynia beaks spreading-recurved; wing abruptly narrowed below middle, thus, base wingless - sterile culms with spreading non-clustered leaves common. Field ID - crowded, nearly globose spikes with perigynia wide-spreading; & by numerous spreading leaves on the numerous sterile culms." (Ilpin) "When mature, *Carex cristatella* is readily distinguished from most other spp of section *Ovales* by the widely spreading perigynia & the globose spikes, but immature specimens are frequently mistaken for other spp, especially *C bebbii.*" (fna)

Comments: status: phenology: Blooms late May – July. In northern Illinois, collect seeds in mid-July - mid-August. Collect seeds in se Wisconsin in August (he99). Wetland restoration, good pioneer sp for upper shoreline plantings, vegetated swales, & rain gardens. Seed sources nursery production, genetic source DuPage Co, & drainage ditches, Green River Lowland, Lee Co.

Associates: Seeds are eaten by waterfowl, gamebirds, & songbirds. Fourteen of fifteen plants analyzed by Miller et al (1999) were mycorrhizal, having arbuscles, vesicles, hyphae, & intra-radical spores.

VHFS: [*Carex cristata* Schwein, Ann Lyceum Nat Hist New York 1: 66. 1824, not Clairville 1811] Sw94 lists f *catelliformis* (Farw) Fern, with spikelets spread out on a moniliform inflorescence. This *forma* grows in wet areas, & rarely occurs in disturbed moist woods, blooms May- July, & is scattered in Illinois.

"Some authors consider this as originating from a hybrid between *C tribuloides* & *C Bebbii*." (Ilpin) "It occasionally stays green all winter, a character that would seem to speak against its being a hybrid of *C bebbii* & *C tribuloides*." (ewf59)




Carex cristatella

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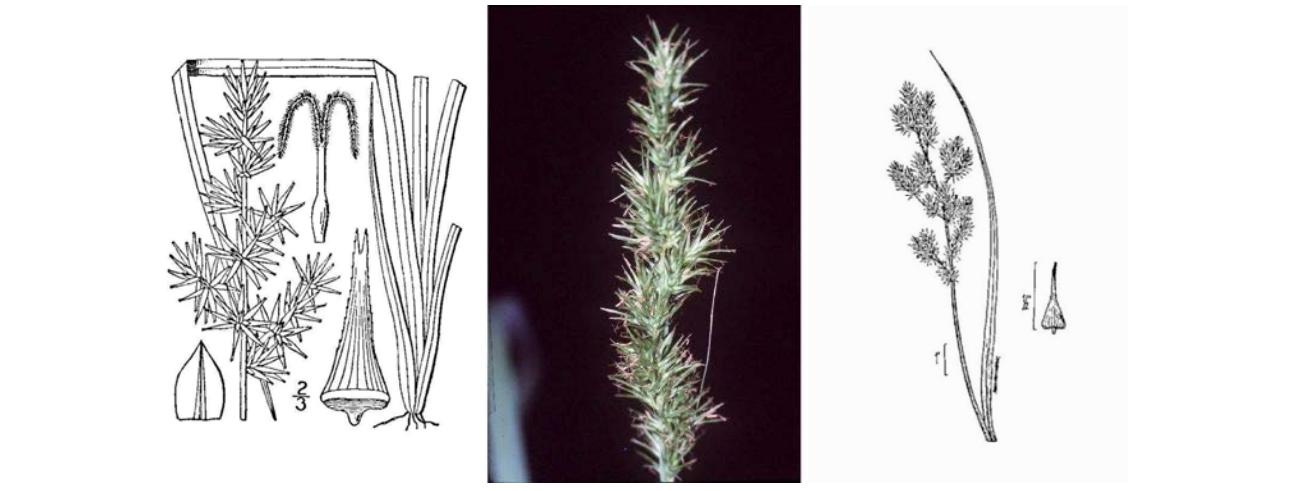
Δ Carex crus-corvi Shuttleworth ex Kinze (or just Shuttlew, or Kuntze?) *MI, OH, WI CROWFOOT SEDGE, aka CROW-BEAK SEDGE, CROWFOOT FOX SEDGE, CROW-SPUR SEDGE, RAVENFOOT SEDGE, RAVENS-FOOT SEDGE, (Latin *crus*, leg or thigh, & *corvus*, raven, for the spurred appearance of the perigynia.) obl Subgenus *Vignae* Section *Vulpinae*
Habitat: Upland swamp, swampy woods & meadows, rare. A slough & river bottom plant. Rare sp of upland swampy depressions on the moraine (ws92). Swamps, wet woods, especially pin oak woods, upland swampy depressions (m02).
distribution/range: Occasional in the southern ½ of Illinois, becoming less common northward. A sp of the Mississippi drainage & the Coastal Plain.
Culture: 60 days cold moist stratification (pm09). (Code C, D Ken Schaal). 150,000(gni) to 208,000 (pm2001), 308,634 (gnia2008), 321,416 (gnia2006), 351,938 (gnih2006), 567,000 (lhn91) seeds per pound. Growth rate moderate. Seedling vigor medium. Vegetative spread rate slow. Spreads slowly from seed.

cultivation: Tolerant of medium & fine textured soils. Anaerobic tolerance low. CaCO3 tolerance low. Drought tolerance medium. Fertility requirement medium. Salinity tolerance none. Shade tolerance intermediate. pH 3.5-7.0.

bottom line: Dormant seeding is insurance for field establishment & cold moist stratification for a reliable green house crop. Germination & dormancy very variable. 4% lots >80% dorm. Flipflop species. Germ 45.2, 57, na, sd 33.9, r2.0-94 (92)%. Dorm 38.6, 23, na, sd 35.8, r2.0-81 (79)%. Test 37, 36, na, r29-47 days. (#6)**
Description: Erect, herbaceous perennial sedge, conspicuous in fruit; culms very stout, densely clustered, narrowly winged, shorter than the leaves, 1.5-3.0'; sheaths thin & truncate at the mouth, not corrugated; perigynia with a bulbous thickened base; N 2n = 52. key features: "Inflorescence basally, sometimes obscurely branched; spikelets not sessile; foliage from glaucous gray or bluish green to deep green. Good distinguishing features are: 1) compound, much branched inflorescence with elongate lower branches, & 2) very elongated perigynium beak. In aspect - robust, large, in leaves & in compound head." (Ilpin)
Comments: status: Threatened in Michigan & Ohio. Endangered in Wisconsin. phenology: Blooms late May - mid-July, 6,7. In northern Illinois, collect seeds in late June - late July. Wetland restoration. Occasionally *C stipata* plugs are sold as *C crus-corvi*. Seed source nursery production, with original source from central Illinois.

"This has been credited to the co by Bebb & others but it is not known to us." (ewf55)
Associates: Possibly partially insect pollinated. Native Lady Bugs work the inflorescences during pollination.
VHFS: [*Carex bayardii* Fern, *C crus-corvi* var *virginiana* Fern.]



Carex crus-corvi

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Carex cryptolepis Mackenzie * IL, PA NORTHEASTERN SEDGE, aka *CAREX À ÉCAILLES CACHÉES*, SMALL YELLOW SEDGE, YELLOW SEDGE, SEDGE, (*cryptolepis -is -es* concealed scale, from Greek κρυπτός, *kryptos,* hidden, & λεπίς, λεπιδο-, *lepis, lepido-*, scale, flake, small plate, capsule.) OBL Subgenus *Carex* Section *Extensae.*

Habitat: Calcareous swales & prairies, fens, frequent near Lake Michigan, in moist sandy soils (ws92). Fens (m02). In New England, shores, on acidic, sandy or organic soils (afne). This is "ditch weed" in the Upper Peninsula. According to fna, this is not found on lime-rich soils. distribution/range: Confined to the extreme northeast cos of Illinois, Lake & Cook cos.

Culture: Placing flats in cold frame in fall worked well.

Description: terminal spike male, occasionally with 1-2 perigynia - androgynous; lateral spikes 3-4, pistillate or androgynous; N 2n = 64. key features: "Rhizomes sans fibrillose scales. Flat, not glaucous foliage. Flowering culms usually exceeding 1/5 M, usually exceeding leaves. Spikes conspicuous. Pistillate ones subglobose, erect, sessile, & top 2 clustered, 3rd & 4th separate to remote (ref. 23). Perigynia lanceolate-obovoid; pistillate scales ovate-lanceolate, shorter or equal to perigynia. Lower perigynia reflexed." (Ilpin)

Comments: status: Endangered in Illinois & Pennsylvania. phenology: Blooms late May to Late June. Blooms May (m02). This is one of two *Carex* spp with short cylindrical pistillate inflorescence with the basal perigynia angled retrorsely. On our honeymoon in UP Michigan, we gathered several sp as seeds from wet roadsides & grew them out the next year. One plant fruited late May 1999 & a few years thereafter. This sp is short-lived when planted in slightly drier than optimum habitats.

VHFS: Hybrids include *Carex cryptolepis* Mack X *C flava* L. & *C cryptolepis* Mack X *Carex viridula* Michx subsp

Carex cumulata (LH Bailey) Mackenzie (or (LH Bailey) Fernald) *CT, IN, NH, NJ, NY, WI CLUSTERED SEDGE, aka *CAREX DENSE,* CROWDED OVAL SEDGE, PILED SEDGE, PILED-UP SEDGE, SEDGE, (*cumulatus -a -um* heaped, massed, from Latin *cumulatus,* heaped up, from *cumulus,* a heap, from the clustered spikelets.)
Habitat: Peaty margins of an oak woods, roadside ditch, & mesophytic depression in a sandy Black Oak depression (ws92). Mesophytic depression in a black oak savanna (m02). In New England, acidic soils, dry or moist, open or wooded, often associated with *Polytrichium* (afne). distribution/range: In Illinois, very rare, Kankakee Co. Infrequent & seldom abundant in its habitats.
Culture:
Description: spikes staminate flowers at base of spike; stigmas; N 2n = 36, 38. key features: "Stout, stiff cespitose culms exceeding the leaves; spikes densely aggregated in an ovoid cluster; achene surrounded by a perigynium- it being broadcast (sic) above the achene. Large spikes, strongly overlapping in a head." (Ilpin) "*Carex cumulata* & *C merritt-fernaldii* sometimes occur together & frequently are miss-identified. *Carex cumulata* can be distinguished, however, by its adaxially green & veined sheaths, obovate perigynia & usually broader (3–6 mm) leaves." (fna)
Comments: status: Endangered in Connecticut & Indiana, & New Jersey. Threatened in New Hampshire & New York. Special Concern in Wisconsin. phenology: Blooms May (m02). C3.
VHFS: [*Carex straminea* Willd ex Schkuhr var *cumulata* LH Bailey] Sterile hybrids of *Carex cumulata* & *C scoparia* are known.

Carex cusickii Mackenzie ex Piper & Beattie CUSICK SEDGE, (*cusickii* after William Conklin Cusick, 1842-1922, Illinois-born botanist who collected in the Blue & Wallowa Mountains of Oregon.) obl Section *Heleoglochin* (formerly *Paniculatae*)
Habitat: Marshes at about 4000 feet, SW Oregon. distribution/range: Western sp.
Culture: DE Steinfeld (2001), using seed from an Oregon marsh at 4000 ft, placed seed in cloth bags in cool running water for 2 days & layered bags between sphagnum moss @ 35°F for thirty days. Green house temperatures kept at 90 to 95°F daytime & 70°F nights, with 90-100% humidity from foggers, irrigation once every hour, & lights on 24 hours. Plants available Fourth Corner Nursery.
Description:
Comments: 7,000,000 (Hurd & Shaw 1991) seeds per pound.
VHFS: [*Carex teretiuscula* Goodenough var *ampla* LH Bailey, Mem Torrey Bot Club 1: 53. 1889, *C obovoidea* Cronquist]

DE Steinfeld, 2001 Propagation protocol for production of container *Carex cusickii* plants (Root Trainer 20): J Herbert Stone Nursery, Central Point, Oregon, In Native Plant Network, URL:http//www.nativeplantnetwork.org (accessed 9 July 2002). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.

Carex cusickii
Photos EG Hurd, NL Shaw, J Mastrogiuseppe, LC Smithman, & S Goodrich. 1998. USDA-NRCS PLANTS Database / Not copyrighted images

Δ Carex Davisii Schweinitz & Torrey *CT, MD, MA, MI?, MN, NY, TN AWNED GRACEFUL SEDGE, aka DAVIS' SEDGE, TERRACE SEDGE, (named for Emerson *Davis,* 1798-1866, Massachusetts educator & caricologist.) FAC+ Subgenus *Carex* Section *Gracillimae* Not to be confused with *C davyi* Mackenzie, DAVY'S SEDGE

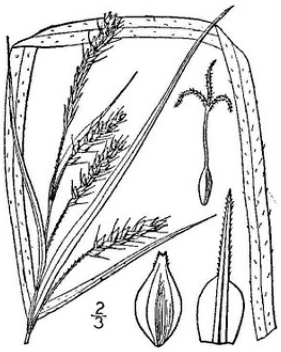
(m02). In New England, rich calcareous, deciduous woods, meadows, & shores (afne). distribution/range: Occasional to common throughout Illinois.
Culture: ①60 days cold moist stratification (pm09).

seed counts & rates: 144,000 (pm01), 153,482 (gnh13), 162,348 (gnh14), 167,096 (gna04), 170,613 (gnh09), 177,621 (gnh11), 177,778 (gn), 178,723 (gnh12), 196,254 (gna06), 199,736 (gna07), 210,185 (gna10), 216,000 (lhn91), 288,303 (gnh09) seeds per pound.

bottom line: Dormant seeding is necessary for field establishment. Easy in greenhouse with long, cold moist stratification. Unstratified seed germinates 0-11%. Consistently strongly dormant, 81-98% dorm. Germ 5.2, 5.0, 4.0, sd 2.9, r0.0-11 (11)%. Dorm 87.9, 89, 85, sd 4.5, r81-98 (17)%. Test 38, 37, 39, r24-68 days. (#12).**
Description: Erect, herbaceous, perennial sedge; culms dark maroon at base; terminal spike gynaecandrous, laterals (2-3) pistillate; pistillate scales 7.5 x 2.5 mm, awn 3.5 mm, perigynia 5 x 2.5 mm; N 2n = ? key features: ①"This sp is characterized by: 1) dark rootstocks, pubescent leaf sheaths & lower surfaces of leaves; 2) narrowly cylindric pistillate spikes; 3) triangular achene with concave sides, blunt angles that are loosely enveloped by the perigynium, substipitate & apiculate. Early on, pistillate spikes are erect, but may become nodding-spreading. Early on, the perigynia are pale green, but become brown to yellow-brown." (Ilpin)
Comments: status: Native. Endangered in Connecticut & Massachusetts. Endangered & extirpated in Maryland. Special concern in Michigan (?) & Tennessee. Threatened in Minnesota & New York. phenology: Blooms mid-May-early June. In northern Illinois, collect seeds in mid- to late June. Seed source nursery production from genetic sources Kane, DuPage, & Will Cos.

"A common sedge mostly of low woods. The disposition of the perigynia & scales in the spikes varies to such a degree as to at times suggest *C formosa* Dew which we have not found here." (ewf55)

"A southern form?" resembles *C amphibola* (*grisea)* with the spikes being cylindrical, but not stiff. Long awned scales give spikes a "woolly caterpillar look". It is our only sedge with hairless perigynia & hairy leaves.
VHFS: Glabrous specimens from the western part of this sp range were described as forma *glabrescens* by G Kükenthal (1909), now considered unworthy of recognition. A single collection of an unconfirmed hybrid of *C davisii* & *C hirsutella* has been reported from Missouri (G Yatskievych 1999+)



Carex davisii
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Carex X deamii FJ Herm. DEAM'S SEDGE, (*deamii* honoring Charles Clemon Deam, (1865-1953), Indiana botanist, forester, conservationist, surveyor, pharmacist, small business owner, & author.)
Habitat: Wet alluvial woods (m02). distribution/range: Rare, in Illinois, Fayette, Macon, Pike, & Shelby cos. Also known from Indiana, Kentucky, & Missouri.
Culture:
Description: N. key features:
Comments: status: phenology: Blooms May (m02).
VHFS: Reputed to be the hybrid between *C shortiana* Dewey & *C typhina* Michx.

Carex debilis Michaux var **rudgei** LH Bailey *IN WHITE EDGE SEDGE, aka BEAKED SWAMP SEDGE, *CAREX DE RUDGE*, NORTHERN WEAK SEDGE, WEAK SEDGE, (Latin *debilis -is -e*, disabled, weak, frail, for the slender peduncles, & Edgar Rudge, 1763-1846, British botanist.)

Description: Topmost spikes are usually staminate, laterals 2-4, pistillate; N 2n = 52, 54, 55, 56 (variety *debilis*) or 50, 52, 54, 56, 60 (variety *rudgei*), key features: ①"The culms are basally reddish-purple, with filamentose basal sheaths. Blades & sheaths are scabrous-pubescent. Staminate spikes are long-pedunculate & droop. Perigynia are conspicuously beaked & stalked, mostly glabrous, broadly to ovately lanceolate. Achenes are triangular, concave below, with thickened angles, punctate, strongly stipitate, & jointed with the flexuous style." (Ilpin)
Comments: status: Threatened in Illinois. phenology: Blooms May – June (m02). Blooms May 26 to June 06, mean week 13.
VHFS: [*Carex allegheniensis* Mack, *C debilis* var *intercursa* Fern, *C debilis* var *interjecta* LH Bailey, *C debilis* var *pubera* A Gray, *C debilis* var *strictior* LH Bailey, *C flexuosa* Muhl ex Willd, *C tenuis* Rudge] Lemon (1943) calls this plant *C flexuosa* Muhl. In New England, var *rudgei* LH Bailey grows in open, moist, deciduous woods, edges, clearings, meadows, usually on soils with pH below 6. [*C debilis* var *interjecta* LH Bailey, 2N = 50, 52, 54, 56, 60 (afne)]

East, south, & west of Illinois five additional varieties of this sp have been mapped (usda). FNA notes that this sp has in the past been divided into three subspp but now only recognizes two varieties. Plants with pubescent perigynia may grow with typical plants having glabrous perigynia in mountains of the southeast part of its range. Hybrids with *Carex virescens* & *C swanii* are known where their ranges overlap. A rare hybrid with *C castanea* also occurs.

Carex debilis rudgei

Line drawings Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Photo Robert H. Mohlenbrock USDA-NRCS PLANTS Database - Not copyrighted image.

Carex decomposita Muhlenberg *IL, IN, KY, MD, MI, NY, OH CYPRESS-KNEE SEDGE, EPIPHYTIC SEDGE, LOG SEDGE, (*decompositus -a -um* decompound, decompounded, more than once divide.) Subgenus *Vignae* Section *Heleoglochin* (formerly *Paniculatae*)
Habitat: Usually on fallen logs or on swollen bases of trees in cypress swamps (m02). Sinkhole ponds of the Ozarks (fna). distribution/range: Rare, confined to the southern tip of Illinois. Rare & local over much of its range. Most common in the Mississippi alluvial plain, it is an Ozark sp, not Appalachian.
Culture:
Description: spikes staminate flowers occurring at the apex of the spike; N 2n = 60, 64, 66. key features: "Culms cespitose; sheaths pale, red-dotted; achene surrounded by a black perigynium which is broadest at the upper half. Spikes many, in a "decompound panicle." (Ilpin)
Comments: status: Endangered in Illinois, New York, & Ohio. Threatened in Indiana & Kentucky. Endangered & extirpated in Maryland. Probably extirpated in Michigan. phenology: Blooms June – August (m02). C3. Pepoon's (1927) report is actually *C sartwellii*.

Carex deflexa see also *Carex umbellata*

Carex deflexa Hermann var **deflexa** NORTHERN SEDGE, aka NORTHERN OAK SEDGE, (*deflexus -a -um* bent downwards, bent abruptly downwards; bent outward, opposite to *inflexus*.)
Habitat: In New England, woods, clearings, turfy or rocky slopes (afne) distribution/range: Southwest Wisconsin & northern lower Michigan
Culture:

Carex deflexa
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Carex deweyana Schweinitz *NJ, OH DEWEY'S SEDGE, aka DEWEY SEDGE, ROUND-FRUIT SHORT SCALE SEDGE, (*deweyana* after Chester *Dewey,* (1784-186, New York botanist, Congregational minister, & professor of chemistry & natural history at the University of Rochester.) Subgenus *Vignae* Section *Deweyana*
Habitat: Widespread throughout North America & eastern Asia, from near sea level to near tree line. Wooded or partially shaded wetlands. Moist forest openings & streambanks. common in cool forests. Woods, NE Winnebago Co. Sandy oak woods (m02). distribution/range: Very rare, Winnebago Co. not seen since 1954 (m02). Beech maple woods in Berrien Co., Mi., & Racine Co., WI.
Culture: ①Non-deep physiological dormancy. Pretreatments include 5 month outdoor winter stratification, seed surface sown (photodormant). Minimum 30 days stratification & germination under fluctuating temperatures are recommended. Germination began the following summer after 2 weeks of 22ºC+ temperatures. Germination uniform. (Luna et al 2001)
asexual propagation: Division is also possible.
Description: A northern sedge; roots plants caespitose, clump-forming; leaves 1.5-5.5 mm wide; spikelets sessile, small, all alike, longer than broad, remote, on an arching zig zag inflorescence, resembling that of *C tenera* & *C aenae*; pistillate scales 4 x 2 mm awn 0.5 mm; perigynia slender, green, ovate, 1.3-1.5(-1.9) mm wide, 4-5.5 mm long (5 x 2 mm, beak 2 mm), flattened, narrowed to a beak, broad, nerveless on the inner face, closely appressed & hidden by the scales fitting tightly over the plump achenes, but with the beaks empty; stigmas 2; N 2n = 54. key features:
Comments: status: Endangered in New Jersey. Presumed extirpated in Ohio. phenology: Blooms April 11 to May 06, mean week 7. Blooms May (m02). 99,773 (Luna et al 2001) seeds per pound.
"This we have recently found in the woods east of Roscoe. We do not know of its having been found elsewhere in Illinois." (ewf55)
VHFS: In New England, grows in rich, open woods, woodland edges.
T Luna, D Wick, & J Evans, 2001 Propagation protocol for production of container *Carex deweyana* Schweinitz plants (160 ml conetainer): J Herbert Stone Nursery, Central Point, Oregon, In Native Plant Network, URL:http//www.nativeplantnetwork.org (accessed 9 July 2002). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.

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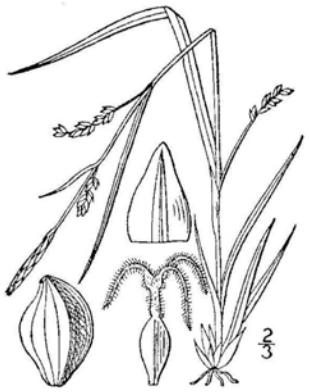
Carex diandra Schrank * MD, NH, PA LESSER PANICLED SEDGE, aka BOG PANICLED SEDGE, BROWN FRUITED FEN SEDGE, *CAREX DIANDRE*, LESSER TUSSOCK SEDGE, PANICLED SEDGE, (*diandrus, diandra, diander* dian'drus (di-AN-drus) furnished with two or twin stamens, from Greek *di*, two, double, & *andros*, male, two stamens. This epithet is unusual for *Carex diandra* as all Carices have three stamens.) Subgenus *Vignae* Section *Heleoglochin* (formerly *Paniculatae*)
Habitat: Quaky or floating peaty mats & bogs. Wet ground. Calcareous moist meadows & bogs (ws92). Calcareous wet meadows, swamps, bogs (m02). In New England, swampy, marshy, or boggy areas, often calcareous (afne). Tolerant of coarse, medium, & fine textured soils. Anaerobic tolerance high. CaCO3 tolerance low. Drought tolerance none. Fertility requirement low. Salinity tolerance none. Shade tolerance intermediate. pH 5.0-7.2. distribution/range: Confined to the northeast corner of Illinois & to a few central cos along the Illinois River. Occasional to rare throughout much of the United States. Circumboreal.
Culture: 60 days cold moist stratification (pm09). Cold moist stratification required. Growth rate slow. Seedling vigor low. Vegetative spread rate none. Spreads slowly from seed.
cultivation: Tolerant of coarse, medium, & fine textured soils. Anaerobic tolerance high. CaCO3 tolerance low. Drought tolerance none. Fertility requirement low. Salinity tolerance none. Shade tolerance intermediate. pH 5.0-7.2.
Description: roots 8" minimum depth; spikes staminate flowers are at top of some-all spikes; N 2n = 48, 50, 54, 60. key features: ①"In loose tussocks from a short rhizome. Perigynia olivaceous to blackish, lustrous, with convex inner face. Culms are densely cespitose; spikes in a compound head." (Ilpin)
Comments: status: Endangered in Maryland & New Hampshire. Threatened in Pennsylvania. phenology: Blooms 5-8.
Description: Similar to *C prairea*. Plants caespitose, sheaths not yellow, but sometimes mottled with red or brown, inflorescence compound, of many tiny crowded sessile spikelets, each group of which resemble a single spikelet; perigynia somewhat divergent, ovate, biconvex, shiny dark brown.
Comments: phenology: Blooms May 15, mean week 10. Blooms May – July (m02). Sometimes seen as the LESSER PINACLED SEDGE.

Carex digitalis Willdenow SLENDER WOODLAND SEDGE, aka NARROW-LEAVED WOOD SEDGE, SHARP-FRUITED WOOD SEDGE, (Latin *digitalis -is -e* pertaining to a finger, or digit, for the pistillate spikelets resemblance to fingers.) (ws92).
Habitat: Dry woods, beech & maple, & white & black oak (ws92). Dry woods (m02). distribution/range: Occasional in the s ½ of Illinois; also Brown, Fayette, Fulton, & Vermillion cos. Go Brown Co Brown Eyes!
Culture:
Description: key features: ①Staminate spikes conspicuous, mostly long-pedunculate, overtopping pistillate spikes. Pistillate spikes mostly erect ascending, loosely flowered, perigynia in 2-3 rows; Leaves glabrous. Pistillate scales acute-acuminate, shorter than perigynia. Perigynia ellipsoid, short-stipitate, pale to dark green or glaucous, with elevated nerves, readily visible on spike, triangular in x-section, closely enveloping the achene. Achene triangular-ellipsoid, not stipitate." (Ilpin)
Comments: status: phenology: Blooms April 11 to May 28, mean week 9. Blooms April – May (m02).
"Commonly found in the same places as *C oligocarpa* & *C jamesii*. In the woods in Alpine & Ingersoll Parks in Rockford." (ewf55)
VHFS: "Ref 4 has 2 varieties for Illinois, *digitalis* & *macropoda* Fern. These differ on: 1) sessile or peduncled nature of fertile spikes; 2) spike length rel. to fertile bract length; 3) culm height." (Ilpin) There are also differences in the number of nerves on the perigynia. Var *digitalis* in New England, grows in deciduous or mixed woods, N 2n = 48 (afne). [including *C copulata* (LH Bailey) Mack]
Variety *floridana* (LH Bailey) Naczi & Bryson grows from Texas to Virginia. Also known as var *asymmetrica* Fern.



Carex digitalis
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Carex disperma Dewey * IL, IN, OH, PA SOFT-LEAVED SEDGE, aka *CAREX DISPERME,* SHORTLEAF SEDGE, TWO-SEEDED BOG SEDGE, TWO-SEEDED SEDGE, (Greek *di*, two, double, & *sperma*, seed, after the few flowered spikelets.) Subgenus *Vignea* Section *Bracteosae* (*Phaestoglochin*).
Habitat: Bogs & mossy woods. Shaded bogs, sw Michigan (ws92). Tamarack & sphagnum swamps & bogs (m02). In New England, mossy or damp coniferous woods, bogs, & clearings (afne). distribution/range: Very rare, Kane & Lake cos.
Culture: Growth rate moderate. Seedling vigor low. Vegetative spread rate slow. Spreads slowly from seed.
cultivation: Tolerant of medium & fine textured soils. Anaerobic tolerance high. CaCO3 tolerance low. Drought tolerance low. Fertility requirement medium. Salinity tolerance low. Shade tolerance intermediate. pH 4.5-6.5.
Description: roots 8" minimum depth; spikes staminate flowers at apex of spike; N 2n = 70. key features: "Culms very slender, weak, loosely cespitose; achene surrounded by an ellipsoid perigynium, spongy, thickened at the base, spikes in a head." (Ilpin)
Comments: status: Endangered in Illinois, Indiana, Ohio. Rare in Pennsylvania. phenology: Blooms May – August (m02). C3.
VHFS: [*C tenella* Schkuhr]

Carex disperma

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. 1st Photo Robert H Mohlenbrock USDA-NRCS PLANTS Database; 2nd & 3rd Photos USDA-NRCS PLANTS Database / EG Hurd, NL Shaw, J Mastrogiuseppe, LC Smithman, & S Goodrich. 1998. Not copyrighted images

Carex disticha *ZEILEN-SEGGE* (*distichus -a -um* (DIS-ti-kus) in two ranks or two rows, having two rows.) see *C sartwellii.*

Carex disticha

Credit: Photos 1 & by Leo Michels - Source: http://www.imagines-plantarum.de/ Public domain image

Carex duriuscula CA Meyer NEEDLELEAF SEDGE, & NARROW-LEAVED SEDGE,

Habitat: "Dry prairies, sagebrush grasslands, openings in dry forests; 300-3300 m" (fna) distribution/range: Rare in

asexual propagation:
cultivation: plant spacing
bottom line:
greenhouse & garden:
Description: plant key features:
Comments: status: Sensitive in Washington. phenology: Blooms Fruiting June-August.
Associates: Ethnobotany:
VHFS: [*Carex duriuscula* subsp *duriuscula, C duriuscula* var *interrupta* Litv, *C duriuscula* subsp *rigescens* (Franch) S Yun Liang & YC Tang, *C duriuscula* subsp stenophylloides (VI Krecz) S Yun Liang & YC Tang, *C duriuscula* var *tenuispica* XY Yuan, *C duriusculiformis* VI Krecz, *C eleocharis* LH Bailey, *C stenophylla* Wahlberg subsp *eleocharis* (LH Bailey) Hultén, *C stenophylla* var *eleocharis* (LH Bailey) Breitung, *C stenophylla* Wahlenb var *enervis* Kük.]

Carex eburnea Boott *IN, ME, MD, NH, PA EBONY SEDGE, aka BRISTLE-LEAF SEDGE, *CAREX IVOIRIN*, HAIRY-LEAVED SEDGE, IVORY SEDGE, (Latin *eburneus -a -um* made with ivory, of ivory, for the whitish scales against the blackish perigynia; from *ebur, eboris*, an object or statue of ivory, or an elephant or elephant tusk, perhaps from *e-*, prefix meaning from, & *barrus*, elephant.) (Pensylvanica group Fassett) Subgenus *Carex* Section *Albae.*
Habitat: Dry to damp limy shores, usually under red or white cedars. Rock Cut State Park, Apple River Canyon. On shaded dolomite in White Pines State Park with *C pedunculata***.** Calcareous slopes near Lake Michigan, Lake Michigan ravines, high dunes of Lake Michigan, edge of a panne, low sand ridges near Lake Michigan (ws92). Calcareous slopes & ravines with Sugar Maple, Basswood, & Red Oak (Ilpin). Calcareous ledges, wooded ravines (m02) distribution/range: Occasional in the n ½ of Illinois, & in cos along the Mississippi River.
Culture: 60 days cold moist stratification (pm09). 832,000 (pm01) to 1,333,333 (gn) seeds per pound. This illustrates the silliness of seed counts. Our seed count is on Prairie Moon seed, then why the difference?
Description: Early minute northern sedge; culms small tufted sedges, forming low mats, 5-15 (54) cm tall, bases brown to red purple; leaves 0.1-1 mm wide; spikes subterminal is entirely staminate or at most with a few perigynia, lateral spikes 2-4, pistillate, staminate spikelet hidden among 2-3 pistillate spikelets, staminate spikelet 1; perigynia minutely pubescent, with only 2 ribs, triangular, light green becoming black, persistent into winter, 1.5-2.2 mm long x 0.7-1.1 mm, beak 0.2-0.4 (-0.5) mm; achenes ellipsoid-obovoid; stigmas 3; N 2n = ? key features: "Identification by over wintering perigynia is usually possible." (ewf59) "1) Aspect; 2) spikes - female spikes erect, ascending, somewhat spreading; sessile to pedunculate; 3) leaves, sheaths, bracts - basal leaves less than 10 mm wide. Leaves capillary, 0.5 mm wide; 4) scales & perigynia - perigynia beakless, or beak less than 0.5 mm l. Perigynia 2 mm l.; 5) achenes." (Ilpin)
Comments: status: Rare in Indiana. Endangered in Maine, Maryland, New Hampshire, & Pennsylvania. phenology: Blooms May 02 to May 04, mean week 9. Flowers April 18, 2005. Flowering April to May-June. During an abnormally warm winter observed blooming March, 17th, 2012. A very attractive little bunch-type sedge. Genetic source Bob Horlock, northeast Illinois.

Bob Horlock was Seedsman for The Natural Garden in the 1980s & early 1990s, & a pioneer in this industry. We were fortunate to have a friendly business relationship with Bob during the early years of our nursery. Bob's seeds were collected in DuPage, Kane, & Will cos. We traded back & forth with him, & several of our production plots originate from his collections. Bob passed away in the early 1990s.
Associates: Nonmycorrhizal. All the culms of our 2010 seed crop were eaten by wraskly wabbits.
VHFS: The following is mistranscribed in ws92?; "This sp is lumped by some with *C albicans*, as *C albicans* var *emmonsii* (Dewey ex Torr) J Rettig."

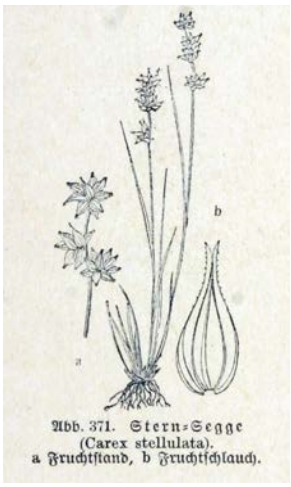

Carex eburnea

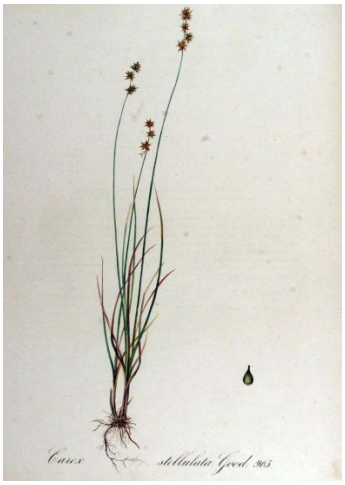
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

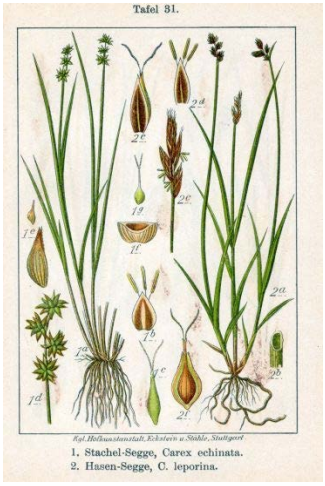
Carex echinata Murray * IL, IN, OH, TN LITTLE PRICKLY SEDGE, aka *CAREX ÉTOILÉ, CARICE STELLARE,* LARGE-FRUITED STAR SEDGE, PRICKLY SEDGE, *STACHEL-SEGGE,* STAR-HEADED SEDGE, STAR SEDGE, *STERN SEGGE,* (*echinatus -a -um* prickly, spiny, set with prickles or spines, from *echinus*, a hedgehog, an edible sea-urchin or a prickle.)
Habitat: Bogs, mat of a floating island, sedge meadow (ws92). Wet meadows (m02). distribution/range: Very rare, Cook & Lake cos, DeKalb Co? Winnebago? In ws92, Walworth Co, Wisconsin, & Lake & Starke cos Indiana. In New England, sphagnous soils (afne). Also in New England, Pacific NW, & Eurasia.
Culture: Commercially available Fourth Corner Nursery.
Description: Spikes resemble little stars; N 2n = 58. key features:
Comments: status: Endangered in Illinois, Indiana, & Ohio. Special Concern in Tennessee. phenology: Blooms May – June (m02). Extreme hybridization potential (Hendrichs et al 2004).

"Plants which answer the description of this sedge are found in boggy places in Coon Creek bottom & are not distinguishable from robust individuals of the above sp (*C sterilis*)." (ewf55 as *C cephalantha* (Bailey) Bicknell)
VHFS: Illinois has the widespread subsp *echinata* (formerly var *echinata*). Ssp *phyllomanica* (W Boott) Reznicek is known from Alaska, California, Oregon, & Washington. Formerly *Carex cephalantha* (LH Bailey) EP Bicknell [*C muricata cephalantha, C stelluata cephalantha*]

[*Carex angustior* Mack, *C angustior* Mack var *gracilenta* Clausen & HA Wahl, *C cephalantha* (Bailey) Bickn, *C echinata* Murr var *angustata* (Carey) Bailey *C hawaiiensis* St John, *C josselynii* (Fern) Mack ex Pease *C laricina* Mack ex Bright, *C leersii* Willd, *C muricata* L var *angustata* (Carey) Carey ex Gleason, *C muricata* L var *cephalantha* (Bailey) Wieg & Eames, *C muricata* L var *laricina* (Mack ex Bright) Gleason, *C ormantha* (Fern) Mack, *C phyllomanica* W Boott var *angustata* (Carey) Boivin, *C phyllomanica* W Boott var *ormantha* (Fern) Boivin, *C svensonis* Skottsberg]



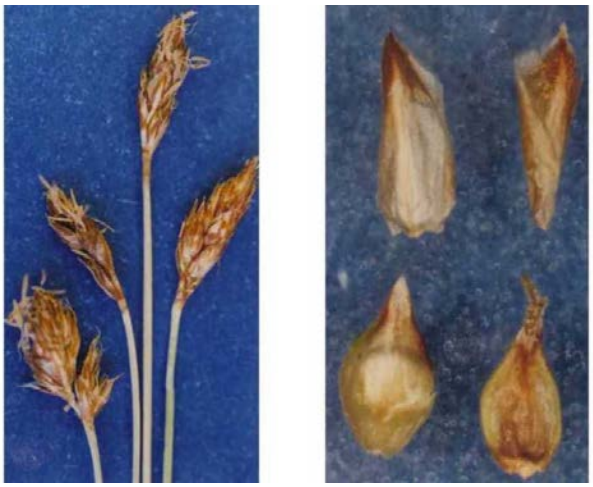




Carex echinata

1st Photo Robert H Mohlenbrock USDA-NRCS PLANTS Database; 2nd & 3rd Photos USDA-NRCS PLANTS Database / EG Hurd, NL Shaw, J Mastrogiuseppe, LC Smithman, & S Goodrich. 1998. Not copyrighted images

Carex eleocharis (*Eleocharis* (*Heleocharis*) (far more etymologically correct as *he*-lee-O-ka-ris, but dumbed down to e-lee-O-ka-ris) marsh-beauty, marsh-favor, marsh-joy, New Latin, from Greek ἑλεο- *heleo-*, marsh, or *helodes*, growing in marshes, *heleios*, dwelling in marshes, & χαρις, *kharis* grace, beauty, pleasant, or χαίρω, *kharo,* to rejoice.**)** See *Carex stenophylla enervis* or *C duriuscula*.



Carex eleocharis

Photos EG Hurd, NL Shaw, J Mastrogiuseppe, LC Smithman, & S Goodrich. 1998. USDA-NRCS PLANTS Database / Not copyrighted images

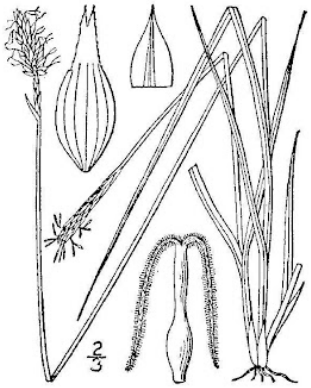
Carex emmonsii Dewey (or Dewey ex Torrey?) EMMONS' SEDGE, aka OAK SEDGE, SHARP-SCALED OAK SEDGE, (*emmonsii* after Ebenezer *Emmons*, 1798-1863, a Massachusetts educator.)
Habitat: Usually in sandy woods, sandy prairies, & beech forest (ws92). Dry woods (m02). As *Carex albicans emmonsii* in New England, woods, usually deciduous, & clearings (afne). distribution/range: rare, Alexander, Cook, Gallatin, Hardin, Kankakee, & Union cos. (m02)
Culture:
Description: N 2n = 36. key features:
Comments: status: phenology: Blooms April 12 to May 20, mean week 9. Blooms April (m02)
VHFS: This sp is lumped by some with *C albicans*, as *C albicans* var *emmonsii* (Dewey) Rettig. [*C albicans* Willd var *emmonsii* (Dewey) Rettig, *C nigro-marginata minor*]

Δ Carex emoryi Dewey ex Torrey (or just Dewey) EMORY'S SEDGE, aka RIVERBANK SEDGE, (*emoryi* after Maj William Hemsley *Emory*, 1811-1887, US Army officer who collected plants while on missions. He was a West Point graduate, Director of the Mexican Boundary Survey &, in 1843, an active commander during the Civil War 9capturing the 1st prisoners of the war), & was made an assistant in the Topographic Bureau in Washington. He also helped survey the boundary between Canada & the ne USA, & the Gasden Purchase.) Subgenus *Carex* Section *Acutae.*
Habitat: Stream margins & swales with flowing water, wooded river floodplains, mesophytic ravine bottoms, sedge meadows, open depressions in oak savanna (ws92). Wet ground sp. Along streams, sedge meadows (m02). In New England, swamps, shores, most often in basic or calcareous waters (afne). distribution/range: Occasional in the n. 2/3 of Illinois; also Johnson, Randolph, & Union cos.
Culture: Cloning, self-sterile (?). The colony outside my office is from transplants, aggressively rhizomatous, & sets no sound seed. It is very likely one self-sterile, genetic individual. 2,250,000 (jfn04), 3,200,000 (gn) seeds per pound. Seed is not available.
bottom line: Establish from plugs.
Description: Abundant sp (or uncommon according to ewf59), conspicuous or dominant in respective habitats; roots plant often forming dense tussocks, also spread by elongate rhizomes; culms 30-150 cm tall, bases often reddish, similar to *C stricta,* but pinnate fibrils lacking; leaves hypostomic, long & slender, to 6.5 mm wide, ligules less high than wide or straight across; *lowest leaves reduced reddish-brown, bladeless sheaths*; sheaths ligule very short, truncate, or forming shallow arc; heads inflorescence arching, with 3-9 slender, many flowered pistillate spikelets below several slender staminate; pistillate scales 3 x .75 mm; perigynia 2-3 mm long, or 2.5mm x 1.5mm, with 3 distinct nerves; achenes flattened; stigmas 2; N 2n = 72. key features: "Its distinction from *C stricta* is marked, but distinction requires examination of the ligules" (ws92). "*Carex emoryi* resembles *C aquatilis* in size & habit, & has similar sheaths & spike dimensions. It is distinguished by the finely veined perigynia, the prolonged convex sheath apex & truncate ligule, & the hypostomic leaves. Most specimens identified as *C aquatilis* var *altior* are *C aquatilis*; the type of *C aquatilis* var *altior* is an immature specimen of *C emoryi*." (fna)
Comments: Blooms May 24, mean week 12. Inflorescences emerge in mid-April. Blooms April – June (m02). Fruits ripen or abort early June. Much like *C haydenii*, not easy to ID. Sheath characteristics & high chromosome number

The *emoryi* is always greener over the septic field. (*And taller.*).
VHFS: [*Carex millegrana* T Holm *C stricta* Lama var *elongata* (Boeck) Gleason *C stricta* var *emoryi* (Dewey) LH Bailey, *C variabilis* LH Bailey var *elatior* LH Bailey, *C virginiana* Woods var *elongata* Boeck]

Carex emoryi, shoreline of the Illinois River, Cooper Park South, East Peoria, Illinois

Carex exilis Dewey *WI COAST SEDGE, aka COASTAL SEDGE, COASTAL STAR SEDGE, (*exilis -is -e* Latin adjective for thin, poor, small, weak, slender, feeble, meager, lank & straight.) Subgenus *Vignae* Section *Stellulatae.*
Habitat: In New England, sphagnum bogs & fens (afne). distribution/range:
Culture:
Description: N 2n = ? key features:
Comments: status: Threatened in Wisconsin phenology: Blooms
VHFS:



Carex exilis
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Carex exserta Mackenzie SHORT HAIR SEDGE,
Habitat: Meadows 7,000-10,000 feet elevation, California, Nevada, Oregon.
Culture: Division of mother plants into 3-4 plants, divisions were placed into vitamin B-1 solution for 15 minutes to lessen transplant shock. Losses were due to covering the crown with soil. (Dyer 2001)
Description:
Comments: Listed in FNA as *Carex filifolia* Nuttall var *erostrata* Kükenthal.
D Dyer, 2001 Propagation protocol for production of container *Carex exserta* seeds: Lockeford Plant Material Center, Lockeford, California, In Native Plant Network, URL: http//www.nativeplantnetwork.org (accessed 9 July 2002). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery

Carex exerta

Photos EG Hurd, NL Shaw, J Mastrogiuseppe, LC Smithman, & S Goodrich. 1998. USDA-NRCS PLANTS Database / Not copyrighted images

Carex festucacea Schkuhr ex Willdenow (or just Schkuhr) *MI Fescue Sedge, aka FESCUE OVAL SEDGE, (*festucaceus - a -um* straw-like, New Latin, from classical Latin *festūca*, popular Latin *festūcum*, the name for a stalk of grain, stalk, stem, straw, & *–aceus*, suffix denoting of the nature of, belonging to, for its resemblance to straw or grass; some sources translate this as a resemblance to fescue, but *au contraire*, mooseface.) fac Subgenus *Vignae* Section *Ovales.*
Habitat: Uncommon sp of mesic prairies & open savannas, wet mesic prairie (ws92), marshes, woods, low grounds. Prairie. Moist prairies, moist savannas, low woods (m02). In New England, wet or seasonally wet places, low woods (afne). distribution/range: Scattered in Illinois, but apparently more frequent in the n. ½ of Illinois.
Culture: Moist cold stratify. Small seeds need light to germinate, scant soil cover. (Code C, D Ken Schaal). 453,000 (lhn), 576,000 (pm01), 800,000 (gn), 1,072,000 (gn) seeds per pound.
Description: Common prairie sedge, tufted; roots; sheaths aphyllopodic; pistillate scales 3.5 x 1 mm, perigynia 4 x 2 mm, beak 1.5 mm; N 2n = 68, 70 key features: "One of the surest ways of separating this sp from similar ones, such as *C longii* & *C absolutescens*, is the distance from the base of the perigynia to the widest part; for the latter two spp this distance well exceeds 1.2 mm (ws92).
Comments: Blooms May 18, mean week 11. Blooms April – June (m02). Special concern in Michigan, similar to *C absolutescens* & *C longii*, blooms 5,6,7.

"A common sedge which is usually found on prairies. All the spikes have prolonged clavate bases thus differing from *C tenera* which also has a moniliform head." (ewf55)

Carex festucacea

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Carex festucacea brevior see *C brevior* & *C molesta*

Carex filiformis

Walter Hood Fitch - Illustrations of the British Flora (1924) - Permission granted to use under GFDL by Kurt Stueber. Source: www.biolib.de

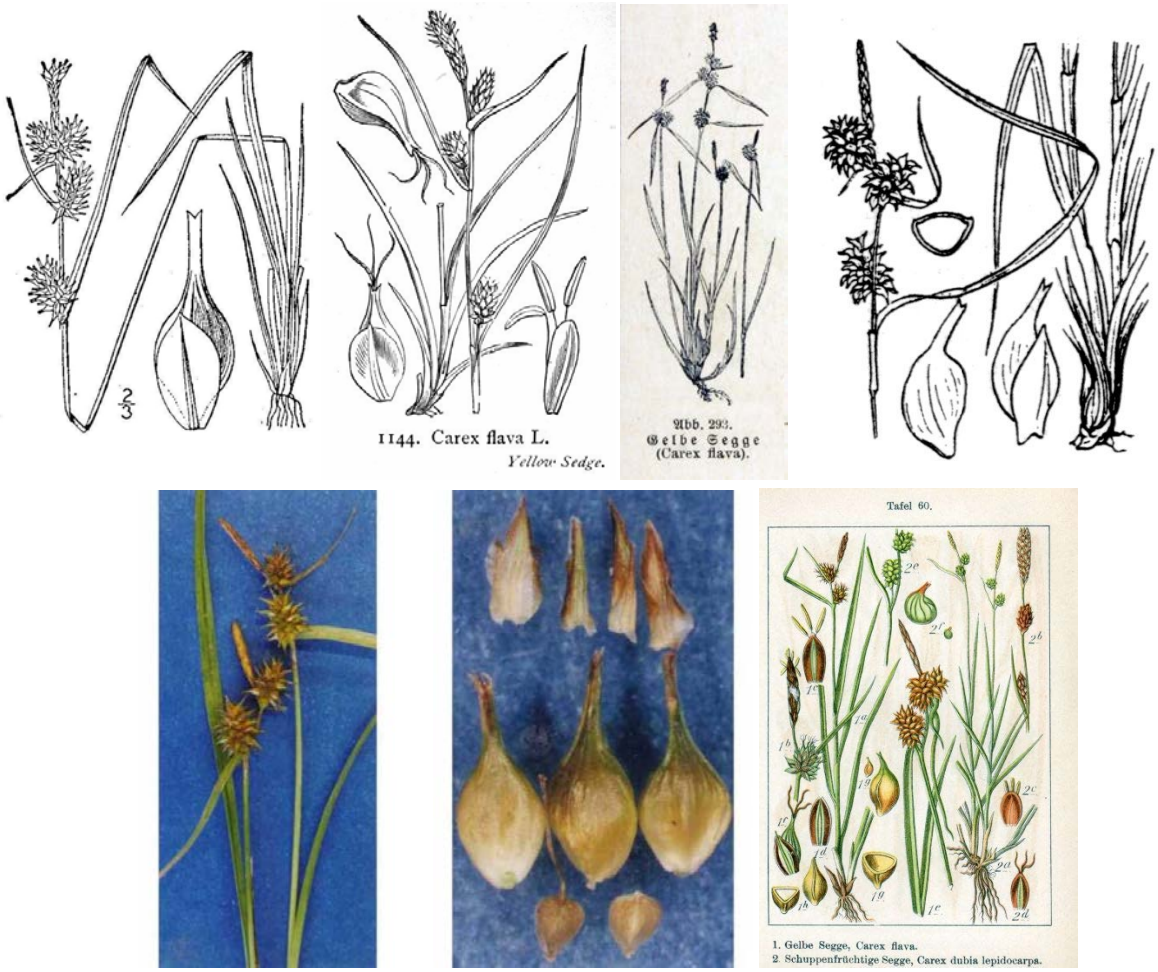
Carex flaccosperma THINFRUIT SEDGE, see *C glaucodea*
Carex flaccosperma glaucodea see *C glaucodea*

Carex flaccosperma Dewey THINFRUIT SEDGE, (*flaccospermus -a -um* with a soft seed.)
Habitat: Wet woods & swamps. distribution/range: Mostly in the s. ¼ of Illinois; also Fayette, Macon, McDonough, Menard, & St Clair cos. (m02) "a plant of the Mississippi Embayment & the Atlantic Coastal Plain.????
Culture:
Description: spikes terminal staminate or barely with a few perigynia, lateral spikes (2-4) pistillate; N. key features: "This is a sp of wet places. Leaves are blue-green, somewhat glaucous. The terminal spike is staminate, sessile to short-peduncled, & always is shorter than topmost pistillate spike. Pistillate scales are less than ½ length perigynia, acuminate to short-awned. Perigynia are beakless, slightly emarginate, ascending. Achene is triangular with concave sides & blunt angles, stipitate, bent-apiculate." (Ilpin)
Comments: status: phenology: Blooms May – June (m02) Mohlenbrock (2002), maintains this along with *C glaucodea*.

Carex flaccosperma

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Photo Robert H Mohlenbrock USDA-NRCS PLANTS Database; Not copyrighted images

Habitat: Marly marsh, wet prairie in the Indiana Dunes region (ws92), coniferous forests, bogs, meadows, & wet sand or marl. distribution/range: Unknown in Illinois.
Culture: Sow at max 5ºC (41ºF), germination irregular, often several months (tchn).
Description: Perigynia 3.5-6 mm long, becoming yellow or orange, 8-18 nerved, with conspicuous straight to decurved beaks & brown scales (say that 3 times fast).
Comments: This is one of two Carex spp with short cylindrical pistillate inflorescence with the basal perigynia angled retrorsely. Blooms early May. Blooms May 12, mean week 10. 494,284 (gnh01) seeds per pound.
Cullina (2008) notes *C flava* as ant-dispersed.
VHFS: *C cryptolepis* Mack X *C flava* L.
WJ Crins, & PW Ball, 1989, Taxonomy of the *Carex flava* complex (Cyperaceae) in North America, Canadian Journal of Botany, 61:1692-1717



Carex flava

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Walter Hood Fitch - Illustrations of the British Flora (1924) - Picture modified from Graebner, Paul - Taschenbuch zum Pflanzenbestimmen (1918) Permission granted to use under GFDL by Kurt Stueber. Jacob Sturm, Johann Georg Sturm - Deutschlands Flora in Abbildungen (1796). Source: www.biolib.de
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C flava var **fertilis** see *C cryptolepis* (Latin *fertilis -is -e*, productive, fertile, in comparison to var *flava*, that has a totally pistillate type specimen.) (ws92)

C flava var **rectirostra** see *C cryptolepis*

Carex flexuosa (*flexuosus -a -um* flexuosus, zigzag, tortuous, bent alternately in opposite directions, to the right & the left, like the path of a snake, from Latin *flexibilis*, *flexilis*, flexible.) see *C debilis rudgei*

Carex foenea Willdenow DRYSPIKE SEDGE, aka BRONZE-HEADED OVAL SEDGE, RUNNING SAND SEDGE, WIND SEDGE

dry sandy places often at the edge of oak woods (ewf59). distribution/range: Mostly confined to the n 1/6 of Illinois, also Kankakee, Menard, & Peoria cos.
Culture:
Description: spikes top either staminate, pistillate, or spikes all staminate; pistillate scales 5 x 2 mm; perigynia 4.5 x 2 mm; N; key features:
Comments: Blooms April 20 to May 12, mean week 9. Blooms April – May (m02)
VHFS: Var *foenea* Willdenow SILVERTOP SEDGE, has perigynia nerved on both faces, tapering gradually to a peak, spikes separated below, closer towards culm tip. Ss94 call this *C siccata*. Variety *enervis* Evans & Mohlenb, with the perigynia nerveless on the ventral face, tapering abruptly to the beak, is from sandy plains, very rare, exact locality unknown &, known only from the type collection (m02)
VHFS: [*C siccata* Dewey] including *C foenea perplexa*.

Carex folliculata Linnaeus LONG-BEAKED SWAMP SEDGE, aka LONG SEDGE, NORTHERN LONG SEDGE, (*folliculatus -a -um* Latin *folliculus*, a small sac or bag, after the sac-like perigynia.)
Habitat: Hydromesophytic swamps & wet, sandy prairies in the Indiana Dunes region (ws92). Swamps (m02). Riparian swamps & marshes (ecs). Moderate shade tolerant. distribution/range: Very rare, reported from Cook Co prior to 1926 (m02). Porter & LaPorte cos, Indiana.
Culture:
Description: rhizomatous; culms to 3'; N; key features:
Comments: Blooms May 25 to June 06, mean week 13. Blooms May – June (m02).

Carex folliculata
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Carex formosa Dewey *WI HANDSOME SEDGE, aka AWNLESS GRACEFUL SEDGE, (*formosus -a -um* beautiful from Latin, finely formed, beautiful, handsome. Apparently Dewey found the plant quite attractive.) Subgenus *Carex* Section *Gracillimae*
Habitat: Clayey, northeast-facing, shaded ravine slope Crestview, WI, near Lake Michigan in 1885. Moist savannas (m02) distribution/range: Very rare, Cook & Lake cos. Racine co., Wisconsin.
Culture:
Description: key features:
Comments: status: Threatened in Wisconsin. phenology: Blooms June (m02).

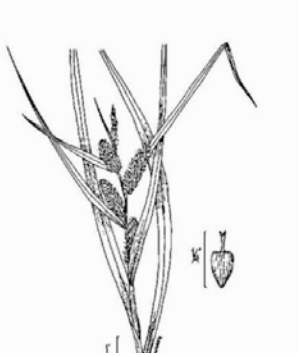
Carex formosa
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Δ Carex Frankii Kunth *MI BRISTLY CATTAIL SEDGE, aka FRANK'S SEDGE, (after Joseph C Frank, 1782-1835, German botanist & physician who travelled & collected in the United States) OBL Subgenus *Carex* Section *Squarrosae* (all spp in this section have obconic or obovoid perigynia abruptly contracted into a beak).
Habitat: Wet meadows, wet savanna. Moist woods, streambanks, low marshy ground, & ditches (ecs). Moist wooded areas, stream terraces, along stream banks (ws92). Wet woods & swamps. Moist woods, along streams, wet ditches (m02). Along Kankakee River in Will Co. Shade tolerant. Low drought tolerance. No salt tolerance. pH 5.9-7.2.
distribution/range: Common to occasional throughout Illinois, except for the north most tier of cos. (m02)
Culture: 60 days cold moist stratification (pm09). Dormant seed or moist cold stratify. Small seeds need light to germinate, scant soil cover. (Code C, D Ken Schaal).

Mediocre greenhouse crops can occasionally be grown without stratification (gni). 2004 seed tests revealed a lot with zero percent dormancy, however this sp has wide reversals in dormancy mechanisms from year to year, with germination as low as 2-6% without cold moist stratification. Cold moist treatment is insurance for greenhouse crops. 232,000 (gn), 272,000 (aes10), 288,917 (gnhm11), 317,927 (gna10), 359,145 (gnh13), 427,294 (gnh02), 434,866 (gnh11), 496,990 (gna05), 500,000 (jfn04), 604,527 (gnam11) seeds per pound.

bottom line: Dormant seed for field establishment. One rare nondormant lot 2004. Flipflop species, but consistently significantly to strongly dormant for a decade. Germ 17.7, 8.0, 8.0, sd 25.9, r2.0-90 (88)%. Dorm 72.6, 84, na, sd 26, r0.0-89 (89)%. Test 32, 37, 38, r21-41 days. (#14).**
Description: rhizomatous?, 9" minimum depth; culms to 2'; spikes terminal spike male, may have 1-2 perigynia on top; occasionally absent or aborted (ref. 2), lateral spikes 3-7, pistillate; N. key features: grows in small tufts on fairly short rhizomes, aphyllopodic, 1.0-2.0'. "This is a stout, large plant. It is readily identified by: 1) long, leaf-like bracts (2-4 times length of inflorescence), 2) very rough, long awns of the pistillate scales; 3) widely spreading perigynia which are broadest nearest the summit." (Ilpin)
Comments: status: Special Concern in Michigan? phenology: Flowers from late May thru mid-September. Wetland restoration, rain gardens, cool season, bunching. "Ornamental", interesting in the moist garden. Seed source nursery production, genetic source DuPage Co. Seems to be somewhat slower than other carices in coming into seed production. George Milner at V3 reports this fairly reliable from seed in the field.






Carex frankii

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. 1st photo Robert H Mohlenbrock USDA-NRCS PLANTS Database; Not copyrighted images. 2nd photo James Catttalus Alwill.

Carex X **fulleri** HE Ahles see *C heterostachya* Section *Paludosae?*

Carex X **fulleri** HE Ahles FULLER'S SEDGE, aka DIFFERENT SPIKE SEDGE,
Habitat: Dry open to lightly shaded site. distribution/range: Winnebago Co, the only known North American location. Native to eastern Asia.
Culture:
Description: key features: "Culm base strongly fibrillose & rhizomes with conspicuous, long, narrow, overlapping fibrillose scales. Flowering culms usually exceeding ⅕ M. Pistillate spikes conspicuous near summit to overtopping the leaves. Foliage strongly glaucous. Achenes poorly developed (ref. 2)." (Ilpin)
Comments: status: phenology: Blooms 6-8. Discovered in 1949.
Associates:
VHFS: Now known as *Carex heterostachya* Bung, which see.

" A delightful genus to work with—" Goodrich & Neese (1986) quoted in Hurd et al (1998).

Te audire no possum, musa sapienum fixa est in aura

Endnotes & abbreviations. The following math functions violate Abbey's 1st Law, which see.
++ The listed numbers are seed count mean, seed count median, seed count mode, seed count standard deviation, seed count max, seed count min, seed count range.
** The listed numbers are Germ mean, germ median, germ mode, germ standard deviation, germ range (range); Dorm mean, dorm median, dorm mode, dorm standard deviation, dorm range (range); Test mean, test median, test mode, test range. (#germ test : tz etc)

Reference abbreviations May 04 2014

CEPPC California Exotic Pest Plant Council
CIPC California Invasive Plant Council
SEPPC Southeast Exotic Pest Plant Council
SWSS Southern Weed Science Society
RBG Kew RBG Kew, Wakehurst Place
aes10 (AES 2010)
afvp (Atlas of Florida Vascular Plants)
anef (Angelo & Boufford: Atlas of New England flora)
apl (Applewood)
asfg (Audubon Society Field Guide)
wade (Alan Wade, nd, various years, 95, &c)

crfg	California Rare Fruit Growers
csvd	(Currah, Smreciu, & Van Dyk 1983)
tchn	tomclothier.hort.net (-4ºC 24ºF stratification being corrected)
cu00	(or cu02, &c, Cullina 2000, 2002, 2008)
nd91	(Norm Deno, 1991, 1993)
den28	(Densmore 1928)
do63	(Dobbs 1963)
mfd93	(Mary Fisher Dunham 1993)
dh87	(Dirr & Heusser 1987)
drwfp	(Directory of Resources on Wildflower Propagation)
ecs	(Ernst Conservation Seeds catalog)
ew12	(Everwilde 2012) also ew11
ewf55	(Egbert W Fell 1955)
ewf59	(Egbert W Fell 1959)
fh	(Robert W Freckmann Herbarium)
fna	(Flora of North America project)
foc	(Flora of China online)
fop	(Flora of Pakistan online)
gni	(Genesis Nursery, Inc)
gc63	(Gleason & Cronquist 1963, 1991)
gran	(Granite Seeds)
he99	(Heon et al 1999)
hk83	(Hartman & Kester 1983)
hpi	(Hill Prairies of Illinois (Hilty website)
Ilpin	(Illinois Plant Information network)
jf55	(Jones & Fuller 1955)
jlh	(JL Hudson, Seedsman, (if the phone doesn't ring its me))
kpw	(Kansas Prairie Wildflowers)
krr	(Kenneth R Robertson)
lbj	(Lady Bird Johnson Wildflower Center Native Plant Information Network)
m14	(Mohlenbrock 2014) also m86, m99, m02, m05, m06, &c
mbg	(Missouri Botanic Garden)
msue	(Michigan State University Extension)
nae	Native American Ethnobotany (Moerman, University of Michigan Dearborn)
now36	(Nowosad et al 1936)
nyfa	(New York Flora Atlas)
orghp	(Ontario Rock Garden Hardy Plant Society)
ppc	(Philips Petroleum Company)
pots	(Plants of the Southwest 2000)
pm09	(Prairie Moon 2009) also pm02, pm11, &c
pnnd	(Prairie Nursery no date)
pph	(Prairie Propagation Handbook)
ppi	(Prairie Plants of Illinois)
psdg	(Plants of South Dakota Grasslands)
pug13	(plants.usda.gov accessed 2013, 2014)
oed	Oxford English Dictionary online
rain	(Ranier Seeds)
rrn97	(Reeseville Ridge Nursery 1997)
rvw11	(Reznicek et al 2011)
rs ma	(Ray Schulenburg Morton Arboretum)
rhs	Royal Horticultural Society
sh94	(Shirley Shirley 1994) & don't call me Shirley
sk08	(Stuppy & Kesseler 2008)

tlw (Time Life Wildflowers)
tpg The Prairie Garden
uconn (UConn Plant Database)
us97 (USDA 1997)
w12b (Weakley Nov 2012) also w07-12
wfatp (Vance & Vance 1979)
wfn (Wildflowers of Nebraska)
wfnp Wildflowers Northern Prairies)
ws92 (Wilhelm & Swink 1992)
w73 (Alphonso Wood 1873)
ry64 (Richard Yarnell 1964)
yy92 (Young & Young 1992)
Reliquum etiam non scriptum est.